THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL 1871.

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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, are requested to forward them before the 1st of May.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

In this Number sixteen additional pages are given, nevertheless we are compelled to postpone until our next a large amount of matter in type.

The following works have been received:—

Practical Lithotomy and Lithotrity; or, An Inquiry into the best Modes of Removing Stone from the Bladder. By Sir HENRY THOMPSON, Surgeon Extraordinary to H. M. the King of the Belgians; Prof. of Clinical Surgery and Surg. to University Coll. Hosp. Second edition, considerably enlarged. London: J. & A. Churchill, 1871.

The Deformities of the Human Body: A System of Orthopædic Surgery. Being a Course of Lectures delivered at St. George's Hospital by BERNARD E. BRODHURST, F. R. C. S., etc. etc. London: J. & A. Churchill, 1871.

Lectures on Aural Catarrh; or, The Commonest Forms of Deafness and their Cure. (Mostly delivered at St. Mary's Hospital.) By PETER ALLEN, M. D., Aural Surg. to, and Lect. on Aural Surg. at, St. Mary's Hosp., etc. London: J. & A. Churchill, 1871.

Lectures on Dermatology: A Synopsis of Diseases of the Skin. Delivered in the Royal College of Surgeons of England, January, 1870, by ERASMUS WILSON, F. R. S., F.R.C.S., Mem. of Council and Prof. of Dermatology. London: J. & A. Churchill, 1871.

The Harveian Oration. Delivered at the Royal College of Physicians, London, June 24, 1870, by WILLIAM GULL, M. D., F. R. S. London: John Churchill & Sons.

The Discovery of the Nature of the Spleen, from an Investigation of the Lateral Homologies of the Liver, Stomach, and Intestinal Canal. By HENRY R. SILVESTER, B. A., M. D. Lond. London: John Churchill & Sons, 1870.

Notes on Transplantation or Engrafting of Skin. By JOHN WOODMAN, Hon. Surg. to Exeter and the Diocesan Training Coll., etc. London: J. & A. Churchill, 1871.

What we Observed during a Visit to the Seat of War in 1870. By CHARLES ORTON, L. R. C. P. Edin., and WM. DUNNETT SPANTON. London: J. & A. Churchill, 1871.

An Inquiry into the Real Nature of Hysteria. By D. DE BERDT HOVELL, F.R.C.S.E.

On the Treatment of Intra-Thoracic Aneurism by the Distal Ligature. By CHRISTOPHER HEATH, F. R. C. S. London: J. & A. Churchill, 1871.

On a Localized Outbreak of Typhoid Fever in Islington, traced to the Use of Impure Milk. By EDWARD BALLARD, M. D. (Lond.), Fell. of University Coll., and Med. Officer of Health for Islington. London: J. & A. Churchill, 1871.

A Treatise on Gout, Rheumatism, and the Allied Affections. By PETER HOOD, M.D. London: J. & A. Churchill, 1871.

The Correlation of Zymotic Diseases. By A. WOLFF, F. R. C. S. London: J. & A. Churchill, 1871.

Guy's Hospital Reports. Edited by C. HILTON FAGGE, M. D., and ARTHUR E. DURHAM. Third Series, Vol. XVI. London: J. & A. Churchill, 1871.

The Manchester Medical and Surgical Reports. October, 1870. Editors: S. MESSENGER BRADLEY and WALTER WHITEHEAD. Manchester: J. E. Cornish, 1870.

The Transactions of the Edinburgh Obstetrical Society. Session 1868–69. Edinburgh: Maclachlan & Stewart, 1870.

Dr. Dobell's Reports on the Progress of Practical and Scientific Medicine in Different Parts of the World. Contributed by numerous and distinguished coadjutors. Vol. II., for the year 1870. London: Longmans, Green, Reader & Dyer, 1871.

Lectures and Essays on the Science and Practice of Surgery. By ROBERT McDONNELL, M. D., F. R. S., F. R. C. S. Ireland, etc. Part 1. Dublin: Fannin & Co., 1871.

On the Correlation of Forces in Hereditary Disease. By Dr. J. M. WINN.

Notes on Nervous Diseases. By WALTER WHITEHEAD, F. R. C. S. Edin., Surgeon to St. Mary's Hospital. Manchester: J. E. Cornish, 1870.

On the Wasting Diseases of Infants and Children. By EUSTACE SMITH, M. D. Lond., Phys. to his Majesty the King of the Belgians, etc. etc. Second American from the second revised and enlarged English edition. Philadelphia: Henry C. Lea, 1871.

A Handbook of Operative Surgery. By JOHN H. PACKARD, M. D., one of the Surgeons to the Episcopal Hosp., Sec. of the Coll. of Phys. of Phila., etc. With 54 steel plates, and numerous illustrations on wood. Philadelphia: J. B. Lippincott & Co., 1870.

Code of Health of the School of Salernum. Translated into English Verse, with an Introduction, Notes, and Appendix, by JOHN ORDRONAUX, LL. D., M. D., Prof. of Med. Jurisp. in Columbia Coll., N. Y., etc. Philadelphia: J. B. Lippincott & Co., 1871.

Elements of Medical Chemistry. By B. HOWARD RAND, M. D., Professor of Chemistry in Jefferson Medical College. Second edition, revised, with additions. Philadelphia: J. B. Lippincott & Co., 1871.

A Treatise on Chronic Inflammation and Displacements of the Unimpregnated Uterus. By WM. H. BYFORD, A. M., M. D., Prof. of Obstetrics, etc., in the Chicago Med. Coll., etc. Second edition, enlarged. Philadelphia: Lindsay & Blakiston, 1871.

The Change of Life in Health and Disease. A Practical Treatise on the Nervous and other Affections incidental to Women at the Decline of Life. By EDWARD JOHN TILT, M. D., Sen. Phys. to the Farringdon Gen. Dispensary and Lying-in Charity, etc. From the third London edition. Philadelphia: Lindsay & Blakiston, 1871.

Spermatorrhœa: its Causes, Symptoms, Results, and Treatment. By ROBERTS BARTHOLOW, A. M., M. D., Prof. of Mat. Med. and Therap. in the Med. Coll. of Ohio, etc. New York: William Wood & Co., 1870.

On Epilepsy: Anatomico-Pathological and Clinical Notes. By M. GONZALEZ ECHEVERRIA, M. D. (Univ. Paris), Prof. of Mental and Nervous Diseases at the University Med. Coll. of New York, etc. New York: Wm. Wood & Co., 1870.

A Practical Treatise on the Medical and Surgical Uses of Electricity, including Localized and General Electrization. By GEORGE M. BEARD, A. M., M. D., and A. D. ROCKWELL, A. M., M. D. With 102 illustrations. New York: Wm. Wood & Co., 1871.

General Surgical Pathology and Therapeutics. In Fifty Lectures. A Text-Book for Students and Physicians. By Dr. THEODOR BILLROTH, Prof. of Surgery in Vienna. Translated from the fourth German edition, with the special permission of the author, by CHARLES E. HACKLEY, A. M., M. D. New York: D. Appleton & Co., 1871.

Body and Mind: an Inquiry into their Connection and Mutual Influence, specially in reference to Mental Disorders. Being the Gulstonian Lectures for 1870, delivered before the Royal Coll. of Phys. With Appendix. By HENRY MAUDSLEY, M. D. Lond., Prof. of Med. Jurisp. in Univ. Coll., London, etc. New York: D. Appleton & Co., 1871.

Circular No. 3. Approved Plans and Specifications for Post Hospitals. Surgeon-General's Office, Washington, November 23, 1870.

Circular No. 4. War Department, Surgeon-General's Office, Washington, December 5, 1870. Report on Barracks and Hospitals, with Descriptions of Military Posts.

The Relations of the Medical Profession to Modern Education. By EDWARD S. DUNSTER, M. D. New York: D. Appleton & Co., 1870.

Partial Paralysis from Reflex Irritation, caused by Conjunctival Phimosis and Adherent Prepuce. By LEWIS A. SAYRE, M. D. Philadelphia, 1870.

Retention of Urine depending on Stricture. By ALEXANDER W. STEIN, M. D., Prof. of Phys. and Histology in the N. Y. College of Dentistry, etc. New York, 1870.

Bloodletting as a Therapeutic Resource in Obstetric Medicine. By FORDYCE BARKER, M. D., Clin. Prof. of Midwifery and Diseases of Women in Bellevue Hosp. Med. Coll. New York: D. Appleton & Co., 1871.

Vaccination, and its Protective Power, in the State of West Virginia. A Report to the Governor, Nov. 8, 1870, by JOHN C. HUPP, M. D., State Vaccine Agent. Wheeling, 1871.

Report on the Proper Treatment of the Insane. By JOHN CURWEN, M. D., of Harrisburg, Pa. Philadelphia, 1870.

A Contribution to the Surgical Therapeutics of the Air-Passages. By GURDON BUCK, M. D., Surg. to the New York Hosp., etc. New York: Wm. Wood & Co., 1870.

Report of Three Cases of Poisoning by Whiskey in Children, with Remarks on

Alcoholism. By PALUEL DE MARMON, M. D., King's Bridge, N. Y. New York: D. Appleton & Co., 1870.

On Dactylitis Syphilitica, with Observations on Syphilitic Lesions of the Joints. By R. W. TAYLOR, M. D., Surg. to N. Y. Disp. New York: F. W. Christern, 1871.

The Health and Wealth of the City of Wheeling; also, General Remarks on the Natural Resources of West Virginia. By JAMES E. REEVES, M.D., City Health Officer. Second edition, enlarged and illustrated. Baltimore, 1871.

Management of the Obstetrical Forceps. By C. C. P. Clark, M. D., of Oswego, N. Y. Albany, 1871.

The General Principles of Organization, and the Evolution of Organic Forms. By JEROME COCHRAN, M.D., Prof. of Chemistry in Med. Coll. of Alabama. Nashville, 1871.

Valedictory Address to the Graduating Class of the Rush Medical College. By MOSES GUNN, A. M., M. D., Professor of Surgery. Chicago, 1871.

Quarterly Summary of the Transactions of the College of Physicians of Philadelphia, from Oct. 6, 1869, to May 18, 1870, inclusive. Philadelphia, 1870.

Transactions of the Twentieth Anniversary Meeting of the Illinois State Medical Society, held May 17 and 18, 1870. Chicago, 1870.

Transactions of the American Otological Society. Third Annual Meeting, Newport, 1870. New York: D. Appleton & Co., 1870.

Proceedings for the Reorganization of the Medical Society of the State of California, and of the First Annual Meeting. San Francisco, 1870.

Transactions of the American Ophthalmological Society, 1870. New York, 1871.

Proceedings of the American Pharmaceutical Association at the Eighteenth Annual Meeting, held in Baltimore, Md., September, 1870. Philadelphia, 1870.

Transactions of the Medical Society of the State of New York, for the years 1840, 1841, 1842, and 1843. (Reprint.) Albany, 1868.

Report of the Board of Health of the City of Chicago, for 1867, 1868, and 1869, and a Sanitary History of Chicago from 1833 to 1870. Chicago, 1871.

Forty-fourth Annual Report of the Inspectors of the State Penitentiary for the Western District of Pennsylvania. Pittsburg, 1871.

Second Annual Report of State Board of Health of Massachusetts. Boston, 1871.

Annual Report, for 1870, of the Philadelphia Dispensary. Philadelphia, 1871.

Annual Report of the Hospital for the Insane of the State of Wisconsin, for the year ending Sept. 30, 1870. Madison, 1870.

Third Report of the Hospital for the Insane of the Northern District of Pennsylvania. Danville, December, 1870.

Annual Report of the Mississippi State Lunatic Asylum, for the year 1870.

Second Annual Report of the Children's Hospital, for 1870. Boston, 1871.

Annual Report (for the year 1870) of the New York State Inebriate Asylum, Binghamton, N. Y. Albany, 1871.

Report of the Pennsylvania Hospital for the Insane, for the year 1870. By THOMAS S. KIRKBRIDE, M. D., Physician-in-Chief and Superintendent. Philadelphia, 1871.

Report of the State of the New York Hospital and Bloomingdale Asylum, for the year 1870. New York, 1871.

Tenth Annual Report of the Alabama Insane Hospital. Montgomery, 1871.

Sixteenth Annual Report of the Southern Ohio Lunatic Asylum. Columbus, 1871.

The following Journals have been received in exchange:—

Archiv der Heilkunde. 1871, Erstes Heft.

Archiv für Anatomie, Physiologie und Wissenschaftliche Medicin. 1870, Nos. 4, 5.

Centralblatt für die Medicinischen Wissenschaften. 1870, Nos. 53, 54, 55, 56; 1871, Nos. 1, 2, 3, 4, 5, 6, 7, 8.

Giornale Italiano delle Malattie Veneree e delle Malattie della Pelle. Novembre, Dicembre, 1870; Genajo, 1871.

L'Imparziale. 1870, No. 24; 1871, Nos. 1, 2, 3, 4.

Gazzetta Medica Di Bari. 1871, No. 1.

The Half-Yearly Abstract of the Medical Sciences. Vol. LII. July to Dec., 1870.

The Retrospect of Medicine. Vol. LXII. July to December, 1870.

The British and Foreign Medico-Chirurgical Review. January, 1871.

The Medical Times and Gazette. January, February, March, 1871.

The British Medical Journal. January, February, March, 1871.

The Lancet. January, February, March, 1871.

The Practitioner. January, February, March, 1871.

The Journal of Cutaneous Medicine. March, 1871.

Edinburgh Medical Journal. December, 1870; January, February, 1871.
The Glasgow Medical Journal. February, 1871.
The Dublin Quarterly Journal of Medical Science. February, 1871.
Medical Press and Circular. January, February, March, 1871.
The Doctor. January, February, 1871.
The Quarterly Journal of Science. January, 1871.
The Indian Medical Gazette. December, 1870; January, 1871.
The Indian Annals of Medical Science. No. XXVII.
Canada Medical Journal. December, 1870; January, February, March, 1871.
The Canada Lancet. January, February, March, 1871.
The Boston Medical and Surgical Journal. January, February, March, 1871.
The New York Medical Journal. January, February, March, 1871.
The Medical Record. January, February, March, 1871.
The Journal of Psychological Medicine. January, 1871.
The American Journal of Insanity. January, 1871.
The American Journal of Obstetrics. Vols. I. and II. February, 1871.
The Buffalo Medical and Surgical Journal. December, 1870; Jan., Feb., 1871.
The Medical Gazette. January, February, March, 1871.
The American Journal of Syphilography and Dermatology. January, 1871.
The Medical Times. January, February, March, 1871.
The Medical and Surgical Reporter. January, February, March, 1871.
The Cincinnati Lancet and Observer. January, February, March, 1871.
The Cincinnati Medical Repertory. January, February, 1871.
The American Practitioner. January, February, March, 1871.
The Chicago Medical Examiner. December, 1870; Jan., Feb., March, 1871.
The Chicago Medical Journal. January, February, March, 1871.
The Indiana Journal of Medicine. January, February, March, 1871.
The Detroit Review of Medicine and Pharmacy. Dec., 1870; Jan., Feb., 1871.
The Saint Louis Medical and Surgical Journal. January, March, 1871.
The Medical Archives. February, 1871.
The Leavenworth Medical Herald. February, March, 1871.
The Northwestern Medical and Surgical Journal. Dec., 1870; Jan., Feb., 1871.
Michigan University Medical Journal. January, February, 1871.
Oregon Medical and Surgical Reporter. December, 1870.
The Pacific Medical and Surgical Journal. Dec., 1870; Jan., Feb., March, 1871.
The Baltimore Medical Journal. December, 1870; January, February, 1871.
National Medical Journal. January, 1871.
The Richmond and Louisville Medical Journal. Dec., 1870; Jan., Feb., 1871.
The Nashville Journal of Medicine and Surgery. January, Feb., March, 1871.
The Georgia Medical Companion. January, February, March, 1871.
The Galveston Medical Journal. February, 1871.
The Journal of the Gynæcological Society of Boston. December, 1870; January, February, March, 1871. Vol. III., 1870.
The American Journal of Pharmacy. January, February, March, 1871.
The Druggist's Circular. January, February, March, 1871.
The Journal of Materia Medica. January, February, March, 1871.
The Pharmacist. December, 1870; January, February, 1871.
The American Journal of Science and Arts. January, February, March, 1871.
The Boston Journal of Chemistry. January, February, March, 1871.
The American Naturalist. January, February, March, 1871.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

All remittances of money and letters on the *business* of the *Journal* should be addressed *exclusively* to the publisher, Mr. H. C. Lea, No. 706 Sansom Street.

The advertisement sheet belongs to the business department of the *Journal*, and all communications for it must be made to the publisher.

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OF THE

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2. On the Diseases and Derangements of the Nervous System, &c. By Marshall Hall, M. D., F. R. S. London, 1841.
3. Researches principally relative to the Morbid and Curative Effects of Loss of Blood. By Marshall Hall, M. D., F. R. S. Am. edition, 1830.
4. Guy's Hospital Reports, 1836, 1841, 1843.
5. The Uræmic Convulsions of Pregnancy, Parturition, and Childbed. By Dr. Carl R. Braun, Professor of Midwifery, Vienna. Translated by J. Matthews Duncan, F. R. C. P. E. American edition, 1858.
6. Qu'est ce que l'Albuminurie? Ou de son Analogie avec les Sécrétions Séreuses, Séro-plastiques, et les Hémorragies, &c. Par le Dr. Léon Germe. Paris, 1864.

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7. Albuminurie dans les Rapports avec l'Hématose, l'Eclampsie des Femmes Enceintes, &c. Par M. Edouard Robin. Paris, Premier Mémoire.
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OF THE MEDICAL SCIENCES

FOR APRIL 1871.

ART. I.—*Complete Osseous Anchylosis of Knee, with Extreme Flexion; Limb straightened after Excision of a Wedge, including the Patella, the greater part of the Condyles, and portion of the Head of the Tibia; with Remarks.* By THOMAS G. MORTON, M. D., one of the Surgeons to the Pennsylvania Hospital. (With two wood-cuts.)

W. H. M., aged 27, from Oil City, Penna., was admitted into the Pennsylvania Hospital Nov. 26, 1869, with absolute osseous anchylosis of the left knee, the angle of deformity being quite acute. The patient, who was a stout, hearty young man, stated that nine years previously, while shaving shingles, the long draw-knife he was using slipped, and produced a wound just below the knee, which apparently opened the joint; immediate union followed. Two weeks later, while exercising for the first time, an unfortunate misstep produced a reopening of the original wound. A long-continued suppurative inflammation of the joint followed, and the knee became much enlarged, and was exceedingly painful. He was confined to bed for more than a year, and during this period numerous abscesses formed, with extensive burrowing of matter, and from several fistulæ pus in large quantities for months was discharged. As gradually these closed up, the leg became more and more flexed upon the thigh, and firm union, with great angular deformity, resulted. Fourteen months after the injury the patient began to move around, not, however, in the usual upright manner, but by flexing the sound limb, corresponding to the angle of the anchylosed one; he thus assumed a squatting posture, the buttocks almost touching the ground during locomotion. He continued this method of walking during a period of some eight years, his general health during the time having been excellent. The anchylosed limb was found, on examination, to be as fully developed as that of the other side, and the an-

chylosis was unusually firm, the leg being flexed to the full extent upon the thigh, while all trace of joint had vanished, and the numerous cicatrices demonstrated the locality of the original fistulæ. See Fig. 1.

Fig. 1.

Fig. 2.

The patient was etherized on the 1st of December, in presence of the clinical class of the hospital; it having been decided to straighten the limb by removing a wedge of bone, the base to involve more particularly the condyles of the femur, with a portion of the head of the tibia, and, necessarily, the patella, which was firmly anchylosed to the condyles. An exploratory operation had demonstrated that the anchylosis was so complete, and the bone so dense, that drilling, with a view to straightening the limb afterwards by manipulation, would be impracticable. A large horseshoe-shaped skin-flap was dissected up, and a wedge-shaped portion of bone removed with the saw, which measured four and a half inches across its base, and two and a half inches in depth.

The bony tissue cut through was so very dense that even the portion of bone covering the popliteal vessels could not be broken, as is usually done, and it was found necessary to use the saw until the section was completed. The patella was found anchylosed to the lower part of the wedge upon the condyles, and all trace of joint had vanished. A few small superficial

arteries only required ligation. The limb was then placed on a well-padded splint at an angle of 175°, with a laudanum dressing on the wound; there was no necessity for dividing any of the hamstring tendons. On the twelfth day there was some burrowing of matter, and an abscess formed, which was evacuated, and the angle of the limb slightly reduced. On the sixteenth day a dry charpie dressing was substituted, and a bandage applied. Three months after the operation the patient could raise the limb, union having taken place to a considerable extent; several fistulæ existed, through which necrosed bone could be felt. During the months of May, June, and July some large fragments of bone, corresponding to the sawn surfaces, were removed, and in August the fistulæ closed up. In July the patient was able to go around on crutches, and could bear considerable weight on the limb, without pain. The operation produced a shortening of two inches (Fig. 2); and although perfect anchylosis was established, it was deemed advisable to place on the limb an ordinary steel support, which was attached above to a broad band which clasped the thigh about its middle, and with a high heel upon a well-fitting laced shoe, the patient was able to walk well and with ease, and left the city about the latter part of September for his home in Northern Pennsylvania.

Charles S. Colbert, Esq., of Oil City, Penna., writes me under date of February 6, 1871:—

"In regard to Miller, he has been at work ever since his arrival at home, which was some time in the month of September of last year, and I saw him this morning. One day during last week he walked a distance of three miles without the aid even of a stick or cane. He has been engaged in driving a team, and loading and unloading barrels of oil, and, in a word, it is the wonder of the whole country where he is known, and his gratitude to you is really very pleasant to witness."

In 1826,[1] the late Dr. J. Rhea Barton first performed the since well-known operation for the relief of an anchylosis of the thigh, which was at right angles upon the pelvis and for the formation of an artificial joint, by simply dividing the femur at the lower part of the cervix. Barton, in 1835,[2] and Gibson, in 1841,[3] each operated, for the relief of deformity and anchylosis of the knee, by removing a wedge of bone from the femur, just above the anchylosis, and in both cases a very successful result followed. Dr. Buck, in 1844,[4] in a case of angular deformity with osseous anchylosis, for the first time removed a wedge of bone, consisting of the patella, condyles, and articulating surface of the tibia, and this operation, which leaves the knee so much less prominent, has since been in such cases, when the drilling operation is impracticable, generally adopted. I know of no case of complete osseous anchylosis requiring an operation similar to that devised by Dr. Buck, as having been performed here, except the one above reported.

[1] North Am. Med. and Surg. Journal, 1827, vol. iii. p. 279.
[2] Am. Journ. of the Med. Sciences, 1837, vol. xxi. p. 332.
[3] Am. Journ. of the Med. Sciences, 1842, vol. iv., N. S., p. 39.
[4] Am. Journ. of the Med. Sciences, 1845, N. S., vol. x. p. 277.

Dr. R. M. Hodges[1] collected nineteen cases of excision for deformity; of these ten recovered, eight died, and amputation was performed in two of the cases for delayed union of the ends of bones.

Eleven additional cases have been collected and tabulated by Lyon,[2] of "these ten recovered, and one died. Of the recoveries, eight had limbs of great usefulness, one was discharged two and a half months after the operation, beginning to use the limb, with firm bony union, while in one no information as to the usefulness of the member is given, beyond the simple statement of recovery."

I have collected nine additional cases; of this number eight were cured, and one died, making a total of thirty-nine cases. Of these ten died, and twenty-eight were cured; one suffered amputation for non-union.

These additional statistics place the operation in a more favourable light than would appear from the tables of Dr. Hodges, who states that "it is not easy to explain this great mortality, except by attributing it to the difficulties and complications which almost universally attend the operation."[3]

Of the twenty cases since only two have proved fatal, the rest having recovered with useful, straight limbs.

Two cases[4] of angular deformity with anchylosis have been reported, which have followed excisions of the knee-joint. In one case, in a female, aged ten, going about too soon after the operation, the uniting medium between the bones yielded, and the limb became permanently flexed. The other case was in a male, aged eighteen, in whom, after an excision of the knee, a bending and dislocation occurred, and "the leg was fixed at right angles to the thigh." Wedges of bones were excised in both cases by Sir Wm. Fergusson. The operation in the first was performed eighteen months after the first excision, and on the fortieth day the patient was discharged with a straight limb, and union firm. In the other case the operation was performed some five years after the first excision; "the patient made a rapid and good recovery."

We may also add these cases, although secondary operations after the ordinary excision for disease, yet performed, nevertheless, for the relief of osseous angular deformity; thus lessening the mortality following the operation. Of forty-one cases in all, thirty were cured, ten died, and one underwent amputation.

[1] Excision of Joints, Boston, 1861, p. 135.
[2] Am. Journ. of the Med. Sciences, 1865, N. S., vol. xlix. p. 63.
[3] Excision of Joints, p. 135.
[4] Swain on Knee-joint, London, 1869, pp. 184–187.

Table showing result of Excision of Knee for Angular Anchylosis, in eleven cases.

No.	Sex.	Age.	Result.	Date of operation.	Operator.	Authority,
1	M.	13	Recovered	Aug. 9, 1861	Holmes	Lond. Lancet, 1862, vol. i., p. 406.
2	F.	29	Recovered in 105 days	May 10, 1862	Fergusson	Swain on Knee-Joint, p. 183.
3	F.	26	Died, pyæmia	Oct. 29, 1864	H. Smith	Ibid., p. 188.
4	M.	15	Recovered in 190 days	Jan. 6, 1865	Fergusson	Ibid., p. 188.
5	M.	8	Recovered	Oct. 7, 1865	H. Smith	Med. Times and Gazette, 1866, vol. i. p. 225, and Swain on Knee-Joint, p. 188.
6	F.	27	Recovered	Oct. 4, 1865	Adams	Trans. of Path. Soc. of Lond., vol. xvii. p. 255.
7	M.	8	Recovered	Sept. 28, 1865	H. Smith	Swain on Knee-Joint, p. 190.
8	M.	30	Recovered in 46 days	Jan. 6, 1866	H. Smith	Med. Times and Gaz., 1866, vol. i. p. 225; Swain on Knee-Joint, p. 190.
9	M.	27	Recovered	Dec. 1, 1869	Morton	
10	F.	10	Recovered excision of knee 18 mos. before	July 26, 1862	Fergusson	Swain on Knee-Joint, 1869, p. 184.
11	M.	18	Recovered excision of knee 5 years before	Jan. 30, 1864	Fergusson	Ibid., p. 187.

ART. II.—*Remarks on Divergent Strabismus.* By EDWARD G. LORING, Jr., M. D., of New York. (With a wood-cut.)

I. IF tenotomy of the muscles of the eye be, as is often asserted, one of the easiest operations in surgery, strabismus, as a whole, is certainly one of its most difficult chapters. And there is probably no subject in this branch of medicine about which so many positive statements have been made, and dogmatic rules laid down, as in this—statements and rules which, however convenient for text-books and the lecture-room, are often found insufficient or unreliable in practice, from the simple fact that many of them are founded on dynamic and mechanical laws which, though of mathematical exactness when applied to inanimate objects, cease to be so in the case of living organs, the conditions of which are never the same in any two cases, and which are constantly varying in any individual case.

I would not wish to imply by this that great advancement has not been made in this subject of late years, or to infer that the labours of Graefe and Donders have not, as is justly claimed for them, rescued this operation from the obloquy into which it had fallen, and placed it on a firm and scientific basis. What we do object to is that positiveness which, by stopping inquiry, prevents progress, and which has a tendency by claiming too much for a given measure to bring it into disrepute, and thereby defeat the very cause it was intended to promote. I cannot help thinking that it has been thus with the, at one time very prevalent, operation for advance-

ment of the internal rectus in divergent squint; since Graefe, who was formerly one of its principal advocates, has, in a late paper,[1] stated that he has almost abandoned it.

Believing that this is the other extreme, and that the operation for advancement of the internus still offers us the best, if not the only, effectual means in certain cases for the removal of a hideous deformity, I have thought that the following remarks might not be without sufficient interest to warrant their publication. And although it is to the operation itself that they will directly apply, there are still a few incidental conditions to which I should like to allude briefly.

It is universally stated in all text-books and monographs on strabismus that myopia is by far the most frequent cause of divergent squint, and if we take this in its broadest sense, as applying to absolute, relative, and dynamic, the statement is undoubtedly correct. Nevertheless, it is comparatively rare in simple myopia, even of the highest grades, that we see that degree of divergence which produces the greatest deformity, and in which the indication for advancement is most strongly marked; on the contrary, it is in precisely the opposite condition that this most frequently occurs, namely, in hypermetropia, where, from injudicious and excessive operating for convergent strabismus, the eye has, as it is properly expressed, gone the other way, and this is especially the case where there is a great discrepancy in the refraction, or sharpness of vision in the two eyes. The reason of this apparent paradox is that, although in simple myopia of high degrees, when the refraction is nearly equal in the two eyes, divergent squint does frequently occur, yet this is usually relative, and not absolute.

This is no doubt due to the fact that, as the eyeball increases in length, thus reducing the capability of the interni, that of the externi is at the same time and for the same reason also reduced; so that, although we have, as a rule, in such eyes a certain amount of insufficiency, or even relative divergent squint for even moderately near objects, we generally have at the same time a certain amount of insufficiency of the externi for the distance, or at any rate we seldom get that amount of absolute divergence mentioned above, for the simple reason that the externi have not the power to produce it.

The fact, too, that the angle *a* of Donders is particularly small in high degrees of myopia, may have something to do with this, especially if such myopes have been in the habit of wearing glasses, and still cling to binocular vision for the distance.

On the other hand, though the reason why we have strabismus with un-

[1] Ueber die Operation des dynamischen Auswärtsschielens. Zehender's Klinische Monatsbl., Aug. und Sept. 1869, p. 266.

equal refraction in the two eyes may not be so apparent, still I cannot help thinking that sufficient study has not been bestowed on this subject, especially as regards inequality in innervation, both of the recti and ciliary muscles. Take, for example, immetropia in one eye and a very large degree of hypermetropia in the other. The amount of tension which it requires to converge the immetropic eye for a near point would be so much over and above what would be demanded by the hypermetropic eye with its shortened antero-posterior diameter. This in itself would have a tendency to throw the hypermetropic eye inwards, always providing that there was the same amount of innervation for the internus of each eye. But admitting that each internus has the power of laying out its force at will, so that although the innervation is unequal in the two eyes, the axes shall still cross each other at a given point; we still have the discrepancy in the refraction, since all experiments so far have proved that the two ciliary muscles cannot act independently of each other. This would make an inequality in the size of the retinal images, which might be of a considerable degree, were the discrepancy between the eyes a large one. This would produce instinctively a desire to sink one of the images, especially the smaller or more imperfect one; and as the eye is hypermetropic and increased convergence easily accomplished, the natural tendency would be for it to turn in, especially as accommodation in the other eye would be thereby assisted. Thus an inward squint is produced, which may in time become of a large degree—say of five lines.

If now we operate on such eyes, and, to remove the deformity, are obliged to cut both interni, we have changed the immetropic eye, so far as the anatomical relation of the muscle to the ball is concerned, into a myopic eye, and although we have obtained apparent or actual parallelism of the axes for the distance, we are very apt to get an insufficiency for the near, which shows itself when the one eye is covered by a screen and an object advanced in the median line, by its spasmodic attempts to hold the convergence, followed by a sudden associated movement outwards. Thus we have produced a dynamic outward squint, which soon occurs throughout the field of accommodation; and this once established, we soon obtain an absolute divergent squint, which may be increased by secondary contraction of the corresponding externus.

This often occasions a very bad kind of asthenopia, accompanied with a dragging sensation which is exceedingly annoying to the patient, and is frequently combined with often-recurring or persistent headache, pain, and giddiness.

It is precisely in these cases that advancement of the now paralyzed rectus internus is most indicated, and gives the greatest relief; provided it is done with judgment, and the necessary precautions, which will be further dwelt upon, are taken.

The above will, of course, apply to all varieties of discrepancies of refraction, only in myopia the initial lesion will be divergent instead of convergent squint, helped no doubt in the beginning by the desire to remove, by lessening the strain on the interni, the far point of the non-squinting eye as far as possible.

I may remark here, parenthetically, that it by no means follows that muscular asthenopia may not occur, because vision is not performed with the two eyes; and where, consequently, the amount of insufficiency cannot be estimated by prisms, but where, nevertheless, tenotomy of the externus may be indicated.

II. Various methods have of late years been adopted for the advancement of the recti muscles, among which may be mentioned those of Von Graefe, Critchett, Dr. Agnew, and Liebreich.

The operation originally proposed by Graefe has been almost entirely given up, being supplanted by later and better methods.

Dr. Agnew's original operation is, when skilfully performed, an exceedingly elegant one, and, as far as the removal of the deformity is concerned, one of the most effectual. I must, however, refer the reader for a detailed account of it to descriptions published in the *Transactions of the American Ophthalmological Society* for 1866; also in the American edition of Stellwag Von Carion, p. 720.

Its most distinctive feature, and one in which it differs from all others, is, that the needles bearing the sutures, after having been passed through the belly of the muscle (previously dissected from all its attachments), at a distance proportionate to the effect desired, are then quilted under and through the conjunctiva, and made to emerge, one above the other, below, at a point corresponding to the vertical diameter of the cornea, and about one line from the corneal margin; that is, over the centre of the line of implantation of the superior and inferior recti respectively. No other sutures, corresponding to the horizontal diameter of the cornea, and natural insertion of the muscle, are used.

This draws the muscle very closely to the corneal margin, and at the same time spreads it out, affording, after the wound has healed, a firm and broad insertion for its new attachment.

The chief objection to this operation is the amount of dissection and manipulation which it entails when the same result can be obtained by simpler methods, while the very means on which its effectiveness depends, namely, the position of the sutures, limits its safe application, as will be shown a little later, to a certain class of cases.

The objection which was raised when the operation was first introduced, that there was danger of sloughing of the cornea from constriction of so much conjunctiva by the sutures, does not appear to be borne out by facts,

as I have never seen any such take place, though chemosis, oftentimes of an apparently very threatening degree, does occur.

This readjustment of the internus is combined with tenotomy of the externus, as is common with all operations; but where the amount of the deformity is very large, the effect is increased by dividing contemporaneously the externus of the other eye.

The operation most in vogue at the present day is Critchett's, which is thus described by Soelberg Wells, p. 585:—

"All the parts covering the inner side of the globe are to be dissected off from the sclerotic (in cases in which a former operation for convergent squint has been followed by secondary divergent strabismus), including conjunctiva, subconjunctival fascia, old cicatrix and muscle, with the condensed tissue around it. He next divides the external rectus, and finally passes sutures through the flap which has been raised at the inner side of the eye, first excising a portion of conjunctiva, and stitches this to the small portion of conjunctiva left standing at the inner edge of the cornea. In this way the whole muscular layer of the internal rectus is brought forward."

This is by far the simplest operation, and in a certain class of cases the best, as it would be in all, were it equally effective with the one just mentioned. This want of effect is due, I think, to the position of the sutures, they being placed in the narrow rim of conjunctiva left standing at the inner edge of the cornea corresponding to the natural implantation of the muscle. This rim is apt to yield to the traction caused by the subsequent swelling of the parts, even if the sutures themselves do not tear through, and thus the effect is often considerably diminished, if not entirely annulled.

To remedy this defect, a combination of the two operations has been adopted in this country, in which all the essential features of Critchett's operation are retained, with the exception of the position of the sutures, which are placed according to the plan suggested by Dr. Agnew, supplementary sutures being placed by some operators opposite the horizontal meridian of the cornea.

Here, as in the former case, if the deformity is large, a contemporaneous tenotomy of the externus of the opposite eye is performed.

But here, again, the same danger arises from the position of the sutures, which was alluded to in Dr. Agnew's operation, namely, the twisting of the vertical meridian; for it is a very difficult thing, when the sutures are carried to such a distance from the natural line of implantation of the muscle, to balance the effect between the upper and lower sutures, so that rotation of the vertical meridian shall not take place to a greater or less degree.

This is liable to occur, either at the time of the operation or subsequently, from yielding of one or the other sutures, or from unequal contraction, during the healing process, of the tissue included in the sutures.

If this twisting of the vertical meridian does take place, a very distressing

form of diplopia may result, and one which it is hopeless to relieve, as the images are separated vertically, and at an angle to each other.

This limits, in my opinion, the safe application of both these operations to that class of cases, fortunately a large one, in which the eye to be operated on is to a great degree amblyopic. When this is the case, a slight twisting of the vertical meridian makes but little or no difference, since, when one eye is very defective in vision, we run little or no risk in producing double images.

When, however, the vision in each eye is perfect, or nearly so, or that in the squinting eye is even moderately good, recourse must be had to some other operation, which, even if less effective, is less dangerous. For, although by all our efforts binocular vision cannot be produced before the operation, diplopia often follows after it, either at once or at some subsequent period.

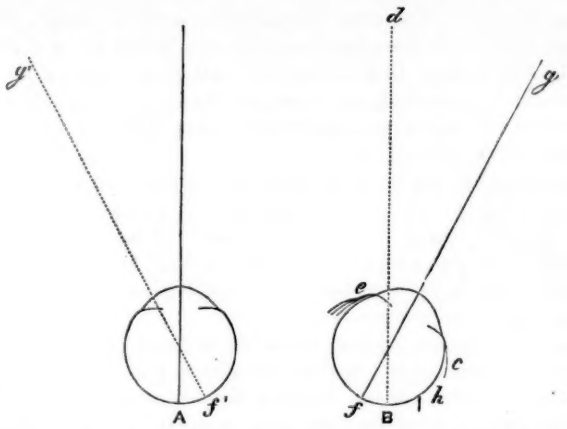
Under these circumstances, when the deformity is large enough to warrant it, Critchett's original operation, with the sutures in the axial line of the muscle, is the best, since it is the simplest in execution, and is not so apt to be followed by the bad effects just alluded to. In case the deviation is great, a tenotomy of the externus of the fellow eye should be combined with it.

There seems to be a difference of opinion in regard to whether the entire correction shall be obtained by confining our operations to the deviating eye; that is, by setting back the externus and bringing forward the internus; or whether we shall, so to speak, divide the effect between the two eyes, as suggested by Dr. Agnew, by at the same time dividing the externus of the fellow eye, by which means an excessive advancement of the internus, and consequent shortening of the muscle, is avoided.

This latter would seem to be the more rational course, as I cannot see why the same rule should not apply to high degrees of divergent strabismus which hold good for convergent in regard to the danger of serious disturbance in mobility when the effect is limited to one eye. Certainly no one at the present time would think of removing a convergent squint of five lines by repeated operations on one eye, and why should it be done in divergent? Yet some operators—Dr. Knapp, for instance—invariably limit the effect to the deviating eye, and maintain that any degree of convergence can be thus corrected. But admitting that any amount of deviation could be thus removed, it does not follow that it is either wise or safe to do it.

In the first place it necessitates a much greater, oftentimes an excessive, advancement and consequent shortening of the internus, and, as a concomitant result, an excessive setting back of the externus. The natural consequence of which is a great want of mobility of the eye both outwards and inwards, the eye becoming as it were locked.

This will be rendered more apparent by the following diagram :—



We will suppose A and B to represent a pair of eyes in which A is the fixing eye, while B diverges from the parallel five lines, its axis being *f g*. We will suppose the externus (*c*) of B to have been thoroughly divided, and the eye then forcibly adducted by bringing forward and shortening the internus (*e*), which, to remove the deformity, must be done to a very considerable degree.

By this forcible rolling in of the eye the externus is allowed to retract to its fullest extent, and the line of its new insertion is necessarily displaced very far backwards (say to *h*); and as the power of the externus decreases disproportionately to its displacement backwards, its force becomes, in this case, almost lost; while, on the other hand, all the energy of the shortened, stretched, and inelastic internus just serves to overcome the former great deviation and keep the axis parallel, the limitations of movement to either side being very great.

There is, moreover, another important element to be taken into consideration, and that is the behaviour, in the meanwhile, of the other eye. To understand this it must be remembered that as the divergence in B is absolute, this eye can never become the fixing eye without a corresponding associated movement outwards of the fellow eye. That is to say, the innervation of the internus of one eye is always combined with that of the externus of the other. It would appear as if precisely the same thing took place when the nervous irritation of the muscle was excited by operative interference, that is, when forcible adduction was produced by bringing forward the internus, as when this was the result of a natural muscular effort. For if, after having performed the operation, and while the patient is still under the influence of the anæsthetic, we raise the lid of the

fellow eye, we always find some, usually a marked, degree of concomitant divergence of its visual axis.

Thus in the diagram, when B's axis $f g$ is made by forcibly bringing forward the internus to assume the position represented by the dotted line B d, A's axis diverges till it assumes the concomitant position $g' f'$. When the narcosis has passed off, and A becomes the fixing eye, B, it is true, no longer falls out, because it is prevented from so doing by the shortened internus. Thus, although we have obtained a good cosmetic result so far as parallelism for distant direct vision is concerned, we have purchased this with a loss of motion in the operated eye, varying in amount in different cases, but I have seen it so great that when the patient looked to one side, convergent squint was present, and when to the opposite side, divergent; the eye operated upon scarcely taking part in any of the lateral or accommodative movements.

What has preceded applies, of course, to those cases in which the amount of deviation is so great that the advancement of the internus is a matter of necessity. When, however, the degree of divergence is not very great, that is, not above three lines; or where, even if slightly greater than this, there is yet a good amount of motion inwards still remaining to the deviating eye; or where the squint, being absolute for the distance, becomes under the stimulus of accommodation and convergence relative for the near—then it is safer to try still other methods which, if less effectual than actual advancement of the internus, are less risky, and which, if unsuccessful, still leave us the recourse to that operation.

We have fortunately in this class of cases a substitute for advancement in the methods adopted by Dr. Knapp, and more recently by Von Graefe, for increasing the effect of a simple tenotomy.

Dr. Knapp's plan is as follows:—

A thorough tenotomy of the externus having been made, a suture is armed with two needles. The point of the first needle is entered close to the inner side of the cornea and one and a half lines above the horizontal meridian, and after having been run through the conjunctiva from above downwards, is again brought out in the horizontal meridian. The second needle is carried in precisely the same way from below upwards, and likewise brought out in the horizontal meridian. The two ends of the suture are then drawn so that the middle of the thread lies in close contact with the globe. This prevents the conjunctiva from being torn through by the subsequent tension. The needles are then carried in close proximity to each other through the inner commissure of the lid, the entrance of the needles being just above the caruncle and their point of exit two lines from this in the integument of the nose. By drawing both ends of the suture, the inner edge of the cornea is made to approach the caruncle to an amount proportionate to the effect desired. The knot is then tied upon

the skin of the nose, and the eye thus secured in its position till the tendon of the divided externus has acquired its new attachment.

The amount of adduction produced by the suture should be such that about one and a half line of convergence should be produced, since experience shows that when this amount is not present immediately after the operation, a certain degree of divergence will finally result.

The suture is to be removed on the day after the operation.

In this way, Dr. Knapp says, a divergent squint of three lines can be entirely removed. In those cases, however, where paralysis of the antagonist exists with the squint, he combines the use of the suture with advancement of the internus, which he performs according to Critchett's method, except that the sutures lying most externally are carried far towards the equator.

This method of increasing the effect of a simple tenotomy is certainly the most efficacious which we have, and in small degrees of divergent strabismus is an excellent substitute for the much more formidable operation of advancement.

For a more detailed account of the subject, I would refer the reader to Zehender's *Klin. Monatsbl.* for September bis December, 1865, p. 346.

Von Graefe thus describes his method :—[1]

"After the tenotomy of the externus has been thoroughly performed, a fold of the conjunctiva close to the caruncle is lifted off from the episcleral tissue with the forceps. A curved needle is then run horizontally through this fold into the subconjunctival space, and made to glide (the forceps being removed to the upper and inner border of the cornea) beneath the membrane, till a portion of this, equal to three, four, or five lines, has been included, when the point is again brought out, its place of exit varying according to the length of its subconjunctival passage, the direction, however, being always from the median line to the upper and inner corneal border, or it may be even to a point above the vertex of the cornea. The suture is then tightly drawn and tied.

"By this manœuvre the eye is rolled inwards proportionately to the breadth of the inclosed tissue, and the limitation in the movement of the eye outwards is much increased. * * * This method has been of signal service to me in the higher grades of strabismus, and I have, since its adoption, been far more reserved in the use of advancement of the muscle. Indeed, I scarcely ever perform this now, on account of the degree of divergence, but only on account of marked limitation of the mobility inwards. Moreover, one is enabled by the above-mentioned method to obtain in excessive degrees of convergent strabismus any correction desirable. The suture must be left in at least two and a half days."

It must be borne in mind that advancement of the muscles of the eye is, under the most favourable circumstances, a serious operation, and should never be undertaken without an exhaustive examination in regard to degree of deviation, amount of vision of each eye, the condition of refraction and accommodation, and dynamic force of the muscles, the presence of, or the ability to produce diplopia, et cætera.

Especial care should be exercised where there is a large amount of

[1] Klinische Monatsblätter, Aug. und Sept. 1869, p. 266.

myopia which has shown a tendency to progress, for by increasing the tension of the interni by bringing forward the muscle, we may again light up a trouble which had begun to disappear with the occurrence of the deviation.

Among the inconveniences of the operation may be also mentioned the displacement of accommodation, and, in this connection, I may remark that I have seen a case where this took place to such a degree that artificial myopia, or spasm of the ciliary muscles, was produced, the eye, previous to the operation, being immetropic, and after it, myopic $\frac{1}{24}$. This myopia yielded to atropia, but gradually returned when the drug was discontinued, and has been present, with slight variations, ever since.

With all its disadvantages, however, I cannot help thinking that "advancement," when properly performed, is one of the most brilliant operations in ophthalmic surgery.

ART. III. — *Account of a Severe Ophthalmia caused by Exposure to the Intense Light Reflected from a Dazzling Surface of Snow.* By W. H. GARDNER, M. D., Assistant Surgeon U. S. A.

WE had the opportunity, when on duty in the prairie regions of the northwest portion of our country, to witness a very severe, and often destructive, ophthalmia, caused by exposure to the intense light reflected from a surface of snow, some account of which may interest the readers of this Journal. This disease is most frequent among Indians and half-breeds of this region, who suffer severely with it every year, and many of them are blind from this cause. In the earlier part of spring, when the snow is beginning to melt, the disease is most common, for then the water formed by the melting snow fills up all the little irregularities of the snowy surface and makes a more perfect mirror.

The grade of the disease accords with the amount of exposure and the length of time the irritation is kept up, and may occur as an ephemeral conjunctivitis, which will subside in a few hours with a removal of the cause, or as a violent panophthalmitis, which destroys the eye at once or leaves a condition which secondarily does so.

Under all conditions, except when the sun is very near the horizon, the eye is protected from its *direct* rays by the supra-orbital arch and eyebrow, but the snow on the ground acting as a mirror throws the *reflected* rays directly into the eye, and the cause acts with more constancy and severity to a pedestrian than to a person riding on horseback or in a covered sleigh, for the body of the sleigh intercepts the reflected light to a great extent, and the head and neck of the horse do so to some degree, but usually the

severity of the cold or the condition of the roads makes walking the only means of travel where this disease most frequently prevails.

Winter expeditions in northern countries will always have this disease to contend against, and if the direction of the march be southward, the course is more aggravated on account of the position of the sun. In the spring of 1866 a troop of Minnesota volunteer cavalry arrived at Fort Snelling to be mustered out of the United States service. They had marched down from Fort Abercombie, Dacotah Territory, during the latter part of February, travelling nearly southeast. When they arrived at their destination there were not ten men in the troop—which was full—who were not more or less snow blind. In the most of the cases it took the form of a mild conjunctivitis, but in several there was ulceration of the cornea and in others panophthalmitis, which has doubtless left permanently impaired eyesight in more than one.

The usual course of the disease and its terminations can be told in a few words. The excessive amount of light first causes an irritation of the retina, which by reflex action produces congestion of the vessels of the conjunctiva and inflammation of this membrane, which becomes chemosed, and thus preventing the nutrition of the cornea, causes ulceration of this part. This ulceration may heal in time, leaving a permanent opaque spot to mark its site; or the ulceration extending, may cause perforation of the cornea and escape of the humours and prolapse of the iris; or the extent of the ulcer may be so great in the first place as to leave permanent opacity of the cornea; or if the irritation of the retina be of long continuance —as it sometimes is among Indians and travellers crossing the plains in winter—all the tissues of the eye may be involved at once, causing loss of sight. On the other hand, if the exposure has been slight, the disease may only amount to a simple conjunctivitis or a slight retinitis, which is cured in a few days by proper treatment and rest of the organ, leaving no other ill effects than a retina over-sensitive to light, and perhaps a few dark spots before the eyes. It may also leave night-blindness as a sequel, though this result must be rare, as I have met with but one instance among the very many cases I have seen.

However mild or severe a form this disease may assume, it is always exceedingly painful, and is always liable to cause destruction of the eye; not only this, but the *lives* of travellers on the plains in the winter-time depend on the organ of vision being intact. The history of each of the military posts of the Northwest will show some lives lost every winter or spring by men becoming snow-blind, losing their way, and perishing in the snow.

The following cases, selected from my note-book, and here given in brief, may not be uninteresting as showing the various forms this disease may assume, and its termination under treatment:—

CASE I.—Dennis T., æt. 40, was admitted to hospital in February, 1866, having marched over two hundred miles, when the ground was covered with snow. There was profuse lachrymation and great photophobia; great injection of the conjunctiva, which was chemosed around the cornea; there was throbbing of the temples, headache and constipation of bowels, furred tongue, &c.

Treatment.—Was cupped over the temples to ℥ij; pil. cath. comp. iv at once; cold dressing to eyes; to be kept in dark room, and to have low diet, with broths and soft toast. In a few days the photophobia subsided, but each cornea was found ulcerated, for which various local stimulants and washes and general tonics were used until the middle of April, when, at his own request, he was discharged, not cured.

CASE VI.—Capt. M., æt. 31, a vigorous, healthy man, rode from Fort Wadsworth, Dacotah Territory, to Fort Abercrombie, D. T., eighty miles, on horseback, in March, 1867, the ground being covered with snow; was led into hospital blind; with intense headache; throbbing of eyeballs; profuse lachrymation; injection of conjunctiva; photophobia, with spasm of orbicularis, etc.

Treatment.—Cupping over the temples; magnesia sulph. ℥j; bromid. potass. ℥ss; ice-water applications to the eyes; to be kept in a dark room and placed on low diet; recovery perfect in five days.

CASE VIII.—A Chippewa half-breed walked to Fort Abercrombie, Dacotah Territory, from Leaf Mountain, Minnesota, distance sixty miles, in April, 1867; ground covered with snow; patient states "that whilst walking directly towards the sun a mist had suddenly come over both his eyes, with a feeling of weight and throbbing in the eyeballs. After sitting down beside the trail and waiting a few minutes, he found the mist continued over the right eye, and over the left there were scattered large black spots, though he could see some out of a portion of the eye, and by this uncertain sight he was able to see the dark line of timber which marked the position of the Red River and the Fort."

Treatment.—Low diet; rest; protection of the eyes from light and motion by packing the orbits; occasional cathartics and potass. iodid. ℈j each day; recovery in four weeks, with a few dark spots, but not of sufficient extent to interfere materially with vision.

CASE IX.—Corporal V., in April, was exposed, whilst on escort duty, to the intense light reflected from the snow. He came into hospital with conjunctivitis; in both eyes this membrane was chemosed around the cornea, and in some places patches of extravasated blood were visible; there was great intolerance of light, throbbing of eyeballs, etc.

Treatment.—Was cupped over each temple; ordered pil. cath. comp. iv; low diet and rest; potass. bromid. ℥ss each night; orbit packed to prevent light and motion. In a few days the more severe symptoms subsided, leaving a small, deep, excavated ulcer upon each cornea. Under the use of local stimulants, general tonics, and liberal diet, these soon healed, leaving a thickening of the conjunctiva at the internal side of the right eye, where the ulcer was nearest the inner canthus.

In this disease, as in most others, "an ounce of prevention is worth many pounds of cure," and with this view many travellers over snowy regions blacken the parts about the orbit with gunpowder dissolved in water. The Esquimaux use an opaque shield of wood or skin, which has a horizontal

slit over the pupil to admit the light. The Chippewa and Dakota Indians, when having to travel when there is snow on the ground, use an apparatus formed of two tubes of stiff buffalo hide about two inches long and three-quarters of an inch in diameter, sewed firmly to a head-band of tanned hide, with openings for the tubes. Each of these plans are the same, in that they attempt to prevent too great a quantity of light from entering the eye by supplementing a diaphragm external to the iris. The iris, of course, under intense light, contracts to as small an opening as is compatible with vision; but even the *smallest* opening so near the retina as is the iris, yet allows of so great illumination as to become a cause of disease, when the snow and ice surface everywhere reflects the intense light directly into the eye. Following out the idea indicated by the rude inventions of the Esquimaux and Indians, I devised goggles of hard rubber, shaped to fit over the orbit, and having over the pupil in the axis of vision a stenopaic opening; or a small oval opening with the transverse axis of the oval horizontal. This supplementary iris or diaphragm I found, on many occasions requiring its use, would prevent snow-blindness entirely, whilst it does not at all interfere with vision except to limit the field of view to the locality directly in front of the eye. Glasses coloured green, blue, or smoke-gray will of course limit the amount of light to a great extent, but they hardly fit closely enough to the orbit to give entire protection, besides which the discoloration given to all objects seen through these coloured media is so annoying and irritating, especially to one unaccustomed to their use, that they frequently cause headache and nausea.

ART. IV.—*Observations on Ulceration of the Jugular Veins, communicating with an Abscess or an Open Sore.* By S. W. GROSS, M. D., Lecturer on Diseases of the Genito-Urinary Organs in the Jefferson Medical College, and Surgeon to the Philadelphia Orthopædic Hospital.

ULCERATION of the bloodvessels, as an effect of the extension to their coats of unhealthy inflammation from the surrounding tissues, is of comparatively rare occurrence, and of still greater infrequency is perforation of these vessels from inflammation commencing in their proper tunics. Since the publication of Mr. Liston's celebrated case of communication of the common carotid artery with the cavity of a chronic abscess,[1] a number of somewhat analogous instances of ulceration of arteries and veins in different portions of the body have been recorded, which clearly establish the fact that

[1] On a Variety of False Aneurism, Brit. and For. Med. Rev., vol. xv p. 155, 1843.

unopened abscesses, and abscesses which have undergone acute ulceration, whereby they are converted into spreading sores, as well as chronic abscesses which suddenly take on acute action, may expose and perforate bloodvessels. Of this lesion, referring to the arteries of the neck, in consequence of abscesses in their neighbourhood, or diffuse cellulitis, I may refer to the following examples, which I have casually noted in collecting the cases that form the subject of this paper: *Subclavian*, Mr. Jackson;[1] *Common Carotid*, Liston,[2] Spence,[3] Mackmurdo,[4] Hodgson and Hargrave,[5] and Else;[6] *Internal Carotid*, Crisp,[7] Hodgson and Hargrave,[8] and Nicholls;[9] *Inferior Thyroid*, Adolphus;[10] *Superior Thyroid*, Dolbeau[11] and Billroth;[12] *Lingual*, Fergusson;[13] and *Facial*, Arnott.[14]

Additional instances of cervical hemorrhage from the same causes, occurring generally in strumous children of cachectic habit, after an attack of scarlet fever or measles, in which the ulcerated vessels communicated with the fauces, or with an open or closed abscess, have been narrated by Liston, Syme, Hargrave, Snow, Carteaux, Storrs, Adams, Hughes, Mayo, Luke, Perry, and other observers. In none of these, however, was the precise vessel discovered, but in all, as well as in those previously mentioned, a fatal issue ensued, with the following exceptions: Those of Syme (1), Hargrave (2–3), Mayo (4), Luke (5), and Perry (6), saved by tying the common carotid;[15] that of Dolbeau, cured by ligating the external carotid;[16] and those of Liston (1), Snow (2), and Adolphus (3), successfully controlled by direct compression.[17]

The unsuccessful cases of ligation are those of Liston,[18] Syme,[19] and

[1] Lancet, 1848, vol. i. p. 157.

[2] Brit. and For. Med. Review, ut supra.

[3] Monthly Journal of Med. Sci., vol. xiv. p. 278, 1852.

[4] South's Chelius, vol. ii. p. 546, Philada., 1847.

[5] Lancet, vol. i. p. 866, 1841–2.

[6] Med. Obs. and Inquiries, 2d ed., vol. iii. p. 177, London, 1769.

[7] Diseases of the Bloodvessels, p. 282, London, 1847.

[8] Lancet, 1841–2, vol. i., ut supra. [9] St. George's Hosp. Rep., vol. iv. p. 211.

[10] Edinburgh Med. and Surg. Journ., vol lix. p. 104, 1843.

[11] Med. Times and Gazette, 1864, vol. i. p. 487.

[12] Genl. Surg. Path. and Ther., p. 531, New York, 1871.

[13] On a Variety of False Aneurism. By Robert Liston.

[14] Lond. and Edin. Monthly Journ. of Med. Sci., 1843, vol. iii. p. 946.

[15] (1) Lond. and Edin. Monthly Journ. of Med. Sci., 1843, vol. iii. p. 945. (2-3) Lancet, 1841–2, vol. i. p 866, and Dublin Quar. Journ. of Med. Sci., 1849, vol. viii. p. 90. (4) Crisp, op. cit., p. 305. (5) Ibid. (6) Glasgow Med. Journ., vol. iv. p. 169, 1831.

[16] Medical Times and Gazette, 1864, vol. i. p. 157.

[17] (1) Practical Surgery, p. 183, London, 1846. (2) Lond. and Edin. Monthly Journal of Med. Sci., 1843, vol. iii. p. 386. (3) Edinburgh Med. and Surg. Journal vol. lix. p. 104, 1843.

[18] Loc. cit. [19] Loc. cit.

Mackmurdo,[1] of the common carotid, and of Hughes, of the internal carotid.[2]

A strumous abscess in the lower part of the neck has been known to excite ulceration of the arch of the aorta. An unusual case of this nature has been reported by Mr. Busk:—[3]

A woman, æt. thirty-five, had been affected with a glandular enlargement just above the sternum for fourteen years. This inflamed and suppurated, and about five months prior to Mr. Busk's attendance it was allowed to discharge itself spontaneously. A fistulous orifice remained in the median line near the episternal notch, which was the seat of a constant purulent discharge. A sudden arterial hemorrhage occurred from this opening, which was restrained by moderate pressure; and, on the following day, a recurrence of the bleeding was subdued by the same measure, when a considerable swelling, attended with diffuse pulsation, formed. The strength of the woman was, however, exhausted, and she expired about forty-eight hours from the commencement of the hemorrhage. Post-mortem inspection disclosed an immense, irregular cavity, occupying nearly the entire front of the neck below the thyroid cartilage, and extending down to the ascending aorta. This was filled by a pound of very offensive coagulum, and communicated with the arch of the aorta by a narrow rent, its coats having been thinned by ulcerative action set up from without, in consequence of which they were unable to withstand the impetus of the blood.

Erosion of the bloodvessels is by no means to be anticipated in cases of abscess or diffuse suppuration of the neck, as it is a law of the economy that they are strengthened by fibrinous deposits, through which they are enabled to resist gangrenous action. It is not an unusual occurrence to see obliterated and thickened veins running through collections of pus or mortified tissues; and I am of the opinion that they are not more liable to ulceration than the arteries, as has been somewhat loosely maintained. When inflammatory changes are going on in tissues around veins, it is found that, in addition to the protective lymph exuded on their exterior, a fibrinous coagulum is formed in their interior, by which they are firmly closed, so that when they do slough, hemorrhage is infrequent. The pressure of an abscess upon a vein is in itself often sufficient to cause obliteration of its cavity, whereas arteries appear to be more disposed to ulcerate. In a case of typho-malarial fever, occurring in a coloured soldier that came under my observation in the Department of the South, during the late war, the connective tissue of the neck was extensively gangrenous. In giving vent to the pus by a large incision, I divided the external jugular vein, but not a single drop of blood escaped, as it had become occluded by pressure. On the other hand, Mr. Spence[4] exhibited to the Edinburgh Medico-Chirurgical Society a specimen of cervical abscess,

[1] South's Chelius, vol. ii. p. 546, Phila., 1847.

[2] Reference mislaid; but the case was one of a child six years old, which had scarlatina, followed by an abscess that opened, and on the tenth day there was arterial bleeding. The internal carotid was tied, when the hemorrhage ceased, but the child sank, and expired on the fifth day after the operation.

[3] Medico-Chirurgical Transactions, vol. xxix. p. 297.

[4] Monthly Journal of Med. Sci., vol. xiv. p. 278.

in which the great vessels and nerves below the angle of the jaw had been laid bare, and the connective tissue completely developed. The common and internal carotid arteries were eroded, and communicated with the abscess, but the cavity of the internal jugular vein was obliterated.

Having had the fortune to meet with an example of fatal hemorrhage from perforation of the internal jugular vein, in consequence of diffuse or gangrenous cellulitis after an attack of scarlatina, I have thought that the publication of its details, with abstracts of other instances of ulceration of the large venous trunks of the neck, would be not without interest, since no attempt appears to have hitherto been made to collect and analyze the recorded cases of this extremely rare lesion.

CASE I.—While visiting, October 3, 1866, a patient who was the subject of acute phthisis pulmonalis, a woman from the neighbourhood came into the house and requested me to look at her child, a boy æt. 21 months. I found a soft diffuse swelling on the right side of the neck, below the angle and body of the lower jaw, and, as it was on the point of bursting, with a bistoury I made an incision half an inch long, which was followed by the escape of about an ounce of fetid, thin, puriform fluid, containing shreds of dead connective tissue. The boy was much emaciated, very pale, and irritable, and the mother informed me that he had been the subject of scarlatina, and that the swelling made its appearance near the angle of the jaw, at about the end of the second week from the date of the eruption, so that it had existed, as nearly as I could discover, five days before I opened it. I directed the application of flaxseed poultices, and ordered five drops of the tincture of the chloride of iron with one grain of sulphate of quinia every six hours, along with a little whiskey in the form of milk-punch. I also endeavoured to impress upon the mother the importance of giving the child the benefit of a purer air, but my advice was not followed.

I heard nothing more of the case until the fourth morning after this, when, while visiting my regular patient, I was told that the child had bled to death in its crib about five hours previously. I immediately sought the woman, who informed me that on going to change the poultice, she found that the child was dead, and that the poultice, pillow, and dress were covered with blood. After much persuasion, I was permitted to lay open the parts. The opening that I had made to evacuate the abscess had enlarged to about five inches in circumference. The connective tissue from the upper boundary of the neck nearly to the clavicle was completely destroyed; the structures in the upper limits of the great anterior triangle laid bare; and blood, partly fluid, partly coagulated, was effused into the lateral and anterior cervical regions. The anterior wall of the internal jugular vein presented an irregular, ovoidal opening, about six lines in length and two in width, the lower border of the ulcer being situated a little above a point opposite the origin of the external carotid artery. There were no inflammatory appearances about the margins of the perforation; the lining membrane of the vein was perfectly smooth and glossy; but, throughout the small extent that I was allowed to examine, the external tunics were thick and dense, and the vessel was empty. The carotid artery was not diseased.

The foregoing case, although not so perfect in its details as I would desire, affords an excellent illustration of destruction of the coats of a

large vein from diffuse cellular inflammation, occurring in an enfeebled subject after a severe attack of scarlatina. There was no evidence of any connection of the lesion with the strumous diathesis; the sudden death from hemorrhage was unavoidable, and I am not aware that any measures could have warded off so unexpected a termination. Had I suspected, however, the possibility of such an event, I would have laid open the cavity freely, and dressed the parts with compresses wet with a solution of the chloride of zinc, with a view to arrest the gangrenous action, and excite the granulating process.

There are on record not less than eleven additional examples of ulceration of the internal jugular vein, and one of the external jugular vein, with hemorrhage into the sacs of closed abscesses, or into abscesses several days after their contents had been evacuated, or into acute or chronic ulcers. The majority of these occurred in children in connection with grave forms of scarlet fever, while others were due to the extension of inflammation to the walls of the vessels from scrofulous sores or abscesses. Assuming that the readers of this journal are not familiar with all of the cases of this unusual and interesting lesion, abstracts of each are subjoined, from which their nature, progress, treatment, and morbid appearances can readily be appreciated and compared. It will be noticed that they are all examples of perforation of the jugulars, which will account for the title of this paper, and if there be a recorded instance of a similar lesion of the subclavian, or of the smaller veins, I have been unable, after careful search, to find it.[1]

CASE II.—October 20, 1842, Mr. Bloxam[2] was requested to visit a girl, æt. 5, who had been under the care of a medical gentleman for three weeks previously, with an attack of scarlet fever. On the decline of the eruption, a lymphatic gland under the angle of the right jaw inflamed and suppurated freely. An abscess had opened itself externally for five days, when a slight venous hemorrhage, which gradually became copious, took place from the aperture. Three days after the first appearance of the blood, Mr. Bloxam saw the case.

The girl was almost exsanguine; the hemorrhage was aggravated by coughing or moving; and, being of a very irritable temper, every time she was excited the flow of blood was copious. The abscess was plugged with lint, and a graduated compress and roller applied, with the effect of restraining the bleeding. This, however, recurred in twelve hours, from the great restlessness of the patient; and, although the compresses were several times readjusted, she was so irritable that they were almost immediately displaced. This state of affairs continued from time to time until her death, on the fifth day from the commencement of the hemorrhage.

[1] As this article was passing through the press the author found that Dr. Payne had exhibited to the Pathological Society of London, at its meeting January 17, 1871, a specimen of communication between the right innominate vein and an obsolete scrofulous abscess, which he believed had given rise to the pyæmic symptoms under which the patient had laboured during life.—*Med. Times and Gaz.*, Feb. 4, 1871.

[2] Med.-Chir. Trans., vol. xxvi. p. 112. London, 1843.

Autopsy.—An immense quantity of semi-coagulated blood was effused beneath the integuments of the throat and forepart of the chest. An oblong ulcer, of five lines in extent, was found in the inner wall of the internal jugular vein, opening immediately into the cavity of the abscess.

Mr. King,[1] of Glasgow, has reported the following case, which presents many points of interest, in addition to the great difficulties in arresting the hemorrhage. At the risk of being deemed prolix, I shall transfer it almost entire.

CASE III.—In consultation with Mr. Brown, on the 13th of November, 1842, Mr. King saw a boy, æt. 4 years, who was stout, and had previously enjoyed excellent health, but who had been seized sixteen days before with pyrexial symptoms, followed by the eruption of scarlet fever, which disappeared in a few hours without any obvious cause. On the second day a diffuse swelling appeared on the right side of the neck, below the lobe of the ear, which impeded deglutition and respiration, and provoked an incessant tickling cough.

For some days the swelling remained stationary; but, after the application of poultices, it pointed and burst, three days before Mr. King's visit, leaving an opening into which a No. 8 catheter could be introduced. A quantity of pus was discharged, and everything seemed to have proceeded favourably until five minutes before "our arrival, when the girl who was holding him observed blood running down his breast from underneath the dressings, and, on removing them to ascertain whence it proceeded, two jets were propelled forcibly upon her face and cap."

On removing the cloths, blood was seen still flowing in a free stream from the opening; the abscess was very tense, and about the size of a hen's egg, and it occasioned considerable dyspnœa and severe paroxysmal coughing, during which it became very firm and prominent from regurgitation. The tumour was not affected by pressure on the carotid, but direct pressure on its walls at once brought on a fit of coughing without displacing its contents. A compress and bandage were applied, to give support and to favour coagulation, but firm pressure could not be brought to bear on the tumour, on account of impeding respiration and provoking coughing. During the afternoon the bleeding recurred, thereby rendering additional compresses necessary.

At noon, on the following day, the tumour had increased in every direction, and the skin had become much attenuated. At seven o'clock the swelling had still further increased, and had produced so much dyspnœa that it had been found necessary to loosen the bandages a little. It was now agreed to change the dressings. "When the bandages were partly removed, the child was seized with a paroxysm of coughing, during which the anterior wall gave way to the extent of two square inches. A thin coagulum, about the size and thickness of a crown piece, was ejected, followed by an immense gush of blood. I instantly introduced the first two fingers of my right hand into the opening, and surrounded the fingers and the tumour with cloths, and very little blood was afterwards lost, although my fingers could not get either to the upper or lower orifices, in consequence of the lower part of the tumour being covered by the parotid gland and sterno-cleido-mastoid muscle. When my fingers were first pressed into the abscess, I felt blood flow freely downwards from above, and propelled upwards with great force during each forcible expiration. A state of syncope followed in a few seconds, and he expired shortly afterwards."

Autopsy.—"The tumour, to a certain extent, had been divided into two sacs, which communicated very freely. The one extended below the digastric muscle and parotid gland to the base of the skull, the other having the parotid gland for its posterior wall, the sterno-cleido-mastoid for its external, the platysma, fasciæ, and skin for its anterior." Nine-tenths of an inch of the external wall of the internal jugular vein, commencing two lines below the base of the skull,

[1] Lond. and Edin. Monthly Journ., 1843, vol. iii. p. 177; also Am. Journ. of Med. Sci., 1843, N. S., vol. vi. p. 216.

and extending downwards, was completely removed as if by a sharp scalpel. The internal wall, and even the margins of the opening, were perfectly healthy, and of the normal pearly-white colour. The walls of the abscess were examined in every direction, and found to be healthy; and an incision, two lines in depth at any point, displayed the surrounding structures in a natural state. The carotid artery and parotid gland were healthy.

CASE IV.—Dr. De Bal,[1] of Sweweghem, attended "a girl, æt. 12, who was affected with swelling of the neck, most marked at the left side, the consequence of scarlatina, which had run its course favourably. An indistinct sense of fluctuation being perceptible, the abscess was opened by the lancet, which gave exit to a large quantity of pus and serum. On the seventh day afterwards, when everything seemed to progress favourably, there took place a copious hemorrhage from the abscess. The patient having fainted, the bleeding ceased; but this returned in the evening, and was succeeded by almost immediate death. On examination, the tumour appeared to be the size of a man's closed hand; and, being cut into, it was found that the suppuration had destroyed a part of the internal jugular vein to the extent of a finger's breadth."

Mr. Robert W. Smith[2] narrated to the Pathological Society of Dublin a case of perforation of the internal jugular vein after scarlatina, which presents the peculiarity of having been fatal from the combined effects of hemorrhage and acute pyæmia.

CASE V.—A boy, æt. 9, was admitted into the Hardwicke Hospital on the 5th of August, with scarlatina. In two days the throat symptoms were well marked, and on the 12th the parotid regions were suddenly attacked with swellings, which extended down the neck, and were hard and tense; and the integuments were inflamed. On the 15th the swelling on the left side had almost subsided, but that on the right side was soft, pale, and colourless. It was opened, and discharged a quantity of thin, unhealthy pus. On the following day another puncture was made near the chin, and his strength was giving way under the profuse discharge. Upon the 18th he had a frequent, short cough, with scanty expectoration and short, hurried breathing; countenance pale and most anxious; pulse faint and rapid. 20th. Diarrhœa. To-day a sudden gush of thin watery-looking blood took place from one of the openings in the neck; about four ounces of blood flowed, and then the discharge suddenly ceased. On the 22d a pale, colourless swelling, with fluctuation, suddenly appeared in the calf of the right leg, and the foot became œdematous. Upon the 23d the right knee-joint became distended with matter, but the boy did not complain of any pain. On the following day there was another gush of blood, and death ensued shortly afterwards.

Autopsy.—The integuments of the right side of the neck were of a dusky colour, undermined, and perforated by a number of small holes. The cellular tissue and upper part of the sterno-cleido-mastoid muscle were in a state of slough, and infiltrated with a thin, fetid, sanious, purulent matter. Near the angle of the jaw, the internal jugular vein presented a small circular opening; "the lining membrane of the vein around the aperture was covered with green lymph, and this again was surrounded by a number of red vessels." The right tonsil was completely destroyed; the epiglottis presented the various stages of inflammation from increased vascularity to ulceration, and the mucous membrane of the larynx was also inflamed. Both lungs were the seat of broncho-pneumonia, with great congestion; but the disease had nowhere advanced to purulent infiltration. "The right knee-joint was distended with purulent matter, and the cartilages were soft but not ulcerated. The muscles of the calf of the leg were infiltrated, and separated from each other by purulent matter; the foot was œdematous, and the ankle-joint contained pus."

[1] Journ. des Connaiss. Méd.-Chir., Oct. 1845, and Dublin Quarterly Journ. of Med. Sci., N. S., vol. i. p. 553, 1846.

[2] Dublin Quarterly Journ. of Med. Sci., vol. i., N. S., p. 505.

CASE VI.—Dr. David[1] has recorded the following case: "I was requested, on the 10th of December, to see a little boy, six years old, confined to his bed with scarlet fever. The symptoms were severe, and continued so for a fortnight; a change then took place; his health daily improved; sitting up and taking light nourishing diet. At this period I noticed a swelling in his neck, which he complained of being very painful on pressure. Liniments, fomentations, and poultices were applied, but it daily increased in size, and eventually came to a point. An opening was made, and about four ounces of the most fetid matter discharged; the orifice increased in size, being ragged and of a deep blue appearance, exposing the jugular vein more than an inch; the coats appeared black, livid, and unhealthy. I cautioned the parents not to let the child be left alone, and gave them my reason. My orders were attended to, but unfortunately, while the nurse was sleeping, early in the morning, the coats of the vein gave way, profuse hemorrhage took place, and upon the mother entering the room, she found her child dead, deluged in blood, and the nurse comfortably asleep."

CASE VII.—A girl, five years of age, was admitted into the London Hospital with an extensive ulcer of the left side of the neck, extending from the ramus of the jaw to the clavicle, part of the latter being in a state of exfoliation. Of this case, Mr. Barret[2] remarked to the London Hospital Medical Society: "The sloughing was the sequela of scarlatina. She appeared almost anæmic, hemorrhage having occurred on two or three occasions prior to her admission. Upon removing the lint and bandages which had been applied by a surgeon in the neighbourhood, an unhealthy, indolent sore was seen, which had penetrated to some depth below the anterior border of the sterno-cleido-mastoid muscle, the remainder of which muscle was completely exposed. At the upper part was seen the parotid gland, through which sinuses seemed to pass, and in one of these was a small clot. The edge of the thyroid body bounded the ulcer in the median line. Lint, moistened with a hot solution of chloride of calcium, was applied over the ulcer; tonics and nourishing food were administered.

"On the following day the ulcer appeared more healthy. Hemorrhage, however, came on from its upper part, and was checked by pressure. On the third day copious bleeding came on at two distinct periods, and the child sank. On dissecting in the course of the carotid vessels, the sheath of the external carotid was found to have been opened by an ulcer in the substance of the parotid gland, and had extended into the internal jugular vein, causing a perforation four lines in length by three in width. The margin of the opening was smooth, and analogous to a perforating ulcer in the intestine."

CASE VIII.—Dr. Murchison[3] exhibited to the Pathological Society of London a specimen of ulceration of the internal jugular vein into an abscess of the neck, obtained from a boy eight years of age, who was the subject of scarlet fever. "Towards the close of the fever an abscess formed in the right side of the neck about the angle of the jaw. On the abscess being opened a large amount of sanious pus was discharged, and the discharge continued for three or four days. A swelling then formed about the same site, which burst and discharged blood and serum. It again formed next day and burst in the same way. This occurred two or three times, and the boy then died about the third or fourth day."

Autopsy.—"A large clot was found lying in the cavity, caused by the bursting of the swelling, and all the parts under the jaw, and at the upper part of the anterior triangle of the neck, were found laid bare, as if for anatomical examination. A large portion of the parotid gland was found lying almost bare in this cavity. A small aperture about the size of a pea, with irregular edges, was found in the internal jugular vein, just above the lower border of the parotid gland, and about half an inch higher up and behind the gland another opening in the vein was found in the form of a slit about half an inch in length.

[1] Lancet, 1847, vol. i. p. 241.

[2] Lancet, 1847, vol. i. p. 287.

[3] Trans. of the Path. Soc. of London, vol. x. p. 99, 1859.

Several lymphatic glands in a state of suppuration were found along the course of the vein."

CASE IX.—A child, æt. 4½ years, of scrofulous and delicate habit, was attacked with scarlet fever on the 19th of August, 1851. Mr. Sedgwick[1] describes the fever to have been severe, and attended with swelling on each side of the throat, that on the right side being the larger. The latter continued to increase, and fluctuation was detected on the 1st of September. Two days subsequently, a small incision made into it gave vent to about one ounce of pale, straw-coloured pus, which was immediately followed by a discharge of dark blood. The hemorrhage was controlled by adhesive strips and a compress secured by a bandage; but, in the evening, the bleeding returned, for which new dressings were firmly applied. The hemorrhage recurred twice afterwards, at intervals of two and three hours respectively; and on the last occasion a narrow strip of lint, steeped in the tincture of the chloride of iron was passed into the cavity of the abscess, and the dressings were applied as before. On the afternoon of the same day, the 4th inst., there was no external appearance of blood, but it was evident that the cavity of the abscess was becoming filled and distended. The child was much exhausted, and large collections of pus had formed on the left side of the neck below the angle of the jaw, as well as over the left clavicle at its acromial side.

On the 5th inst., as there was much distension, Mr. Sedgwick determined to lay the parts open, with a view of determining the source of the hemorrhage, and of arresting it, if possible to do so. He accordingly at 1 P. M. made an incision, upwards of an inch long, into the sac, and removed about four ounces of dark fluid blood mixed with coagula; but the hemorrhage at once became so violent that he required the assistance of a friend to press back firmly the walls of the cavity for the purpose of closing the bleeding orifice. In this he was successful. Firm pressure was then made on the part by compresses; but the blood continued slowly to fill the cavity, and the child died at 9 P. M., there having been but slight external oozing.

The post-mortem inspection showed a cavity of very large extent, the digastric and stylo-hyoid muscles, with the main vessels and other structures, being in great part dissected out by the gangrenous process. A diseased gland of large size lay free in this cavity; and an opening, of an oval form, with ragged edges, and about four lines in length, was discovered in the internal jugular vein.

The preceding nine cases are examples of ulcers of the internal jugular vein from inflammatory action extending to its walls, communicating with closed or open abscesses or ulcers, and occurring in children after an attack of scarlet fever. The following instance relates to the external jugular vein, in connection with the same disease, and it presents the interesting feature of being an example of hemorrhage into the cavity of a closed abscess, the blood flowing immediately upon an incision being carried into it. In this respect it resembles the ninth case, or that of Mr. Sedgwick; and differs only from the "variety of false aneurism" of Mr. Liston, in that the sac of the abscess contained venous, and not arterial blood.

CASE X.—Under the care of Dr. Hoffman.[2] "A child, æt. 5 years, on recovering from scarlatina, suffered an attack of inflammation and swelling in a cluster of subcutaneous glands situated on the right side of the neck. The glands suppurated, and fluctuation became distinct. A certain tremour, which was perceptible by the hand, and noise, which could be heard by the ear applied to the abscess, were held suspicious symptoms, and much hesitation was therefore felt in puncturing the tumour; in fact, this was not done until after a con-

[1] London Medical Gazette, N. S., vol. xiii. p. 581, 1851.

[2] Lond. and Edin. Monthly Journal of Med. Sci., 1844, vol. iv. p. 632.

sultation held with a regimental surgeon, who approved of the measure. The abscess was punctured, but immediately an ample stream of blood revealed the true nature of the mischief. The blood at first had a dirty red colour, undoubtedly from the admixture of pus; but before it could be arrested it appeared quite pure. The puncture was closed forthwith, and gentle pressure maintained by means of a bandage; but this was scarcely secured when the patient expired."

"On examination after death, it was found that the external jugular vein was perforated like a sieve in a space three-quarters of an inch in length, and that the parts of the vessel above and below this portion were discoloured and soft. The abscess, which was regarded as metastatic in its nature, had, in fact, extended to the walls of the vein which lay over it, and perforated them."

Such are the histories of the cases of erosion of the jugular veins from diffuse cellular inflammation after scarlatina, without there having been any necessary connection with the strumous diathesis. The succeeding two cases of fatal hemorrhage were due, on the other hand, to the extension of the morbid action from open scrofulous abscesses or ulcers to the walls of the internal jugular vein; and they differ from the preceding group in having run a chronic course, and occurred in adult subjects.

CASE XI.—Mr. Alford[1] communicated to Mr. Liston the case of a woman, æt. 32, of scrofulous temperament and intemperate habits, who had, a little below the middle of the neck, "an ulcer external to the left sterno-cleido-mastoid muscle, one inch and a half long, extending from above downwards, three-quarters of an inch wide, and full one inch deep, extending inwards behind the muscle." Another sinuous ulcer was situated over the sternum. She had severe cough, and great dyspnœa, attended with excited circulation; and stated that about one month previously, the abscesses, which had been in the process of formation about three months, burst. There had been severe hemorrhage during the night previous to Mr. Alford's seeing her, but, as a precautionary measure, compresses soaked in an alum and zinc lotion were applied to the ulcer, and retained by a roller.

On the 16th of April—the duration of the interval not being mentioned, but there had been occasional slight hemorrhage induced by violent coughing—while dressing her neck, there was slight bleeding, followed by a gurgling sound with a frothy appearance of the blood at the bottom of the ulcer, which induced an alarming syncope, from which she gradually recovered under the use of stimulants. A membranous opening was perceived at this time, near the upper extremity of the ulcer. The cough and difficulty of breathing increased, the expectoration became profuse, and the dressings were occasionally stained with blood. On the 16th of May, or upwards of one month from the first appearance of the bleeding, "while dressing her neck, a fit of coughing came on, which was followed by a sudden gush of blood in a stream as large as my little finger from the ulcers, forcing out the plug which I was just about to remove. There were not more than six ounces of blood, at the outside, lost, as I at once arrested the bleeding by pressing with the fingers of my left hand along the inner edge of the sterno-mastoid muscle, while the thumb was applied to the outer edge of the ulcer; but fatal syncope gradually came on, and, though stimulants occasioned a transient hope, she again, in a few minutes, became pulseless and died."

A post-mortem examination revealed an ulcer about six lines long, and two wide, in the anterior wall of the internal jugular vein. On the right side of the chest there were old and firm pleural adhesions, and there were three large irregular cavities in the upper and middle lobes of the lung. There was also a cavity in the upper lobe of the left lung, and an abscess in the right kidney.

CASE XII.—Dr. Michaelis saw,[2] in one of the London Hospitals, a woman

[1] Practical Surgery, by Robert Liston, 4th ed., p. 189. London, 1846.
[2] Richter's Chirurgische Bibliothek, vol. v. p. 120, 1789.

who had a swelling as large as a hen's egg on the right side of the neck, in which pulsation and fluctuation were very evident. It could not be determined, however, whether the fluid was blood or pus, or whether the pulsation was resident in the tumour, or merely transmitted to it by the carotid artery. A fly-blister was applied, and, contrary to all expectation, it disappeared. The patient returned at the expiration of two months, when the swelling was as large as the two fists, but it was not affected, on this occasion, by vesication. Under the supposition that it was an abscess, warm dressings were applied, and, when the integuments had become thinned, it was punctured, with the effect of giving vent to a fluid unlike clear serum (nichts als klares blutwasser), after which its walls collapsed. On the evening of the second day after its evacuation a fatal hemorrhage occurred; and on post-mortem inspection, the internal jugular vein was found to be dilated into a large sac, which had given way at one point.

The foregoing unusual illustration of varix of the internal jugular vein is probably the same as that mentioned by Mr. Hodgson,[1] who says: "Mr. Cline described in his lectures the case of a woman who had a large pulsating tumour in her neck, which burst and proved fatal by hemorrhage. A sac proceeded from the internal jugular vein. The carotid artery was lodged in a groove at the posterior part of this sac."[2]

The following case has not been included in either of the foregoing groups, as its history is too imperfect. It is peculiar, however, from the fact that the mixed contents of the abscess were discharged into the œso-

[1] A Treatise on the Diseases of Arteries and Veins, p. 539. London, 1815.

[2] Haller alludes to a death from spontaneous rupture of a dilated internal jugular vein, *Physiologia*, Lib. Sec., p. 245, 1778; and Puchelt has reported a similar case. *Handb. der Allg. und Spec. Chirurgie*, Band. ii. p. 104; Erlangen, 1865. Dr. Dzondi met with a varicose dilatation of the same vessel, as large as a hen's egg. *Lehrbuch der Chirurgie*, p. 395; Halle, 1824. Mr. Allan Burns had a cast from Dr. Munro, of an internal jugular, which was dilated into a considerable sized pouch, just below and behind the angle of the jaw. *The Surg. Anat. of the Head and Neck*, Amer. ed., p. 303, 1823; and Mr. Callender states that there is a specimen of the same nature in the museum of St. Thomas's Hospital, *Holmes's System of Surgery*, vol. iii. p. 309.

Mr. Bransby Cooper says: "The internal jugular vein is sometimes subject to dilatation, so that the swelling presents itself in the carotid sulcus, and, indeed, may offer considerable difficulty to the surgeon to distinguish it from disease of the carotid artery itself, as, from the vicinity of the swelling to that vessel, it more or less partakes of its pulsating nature. A patient was admitted into the London Hospital, with a swelling about the size of an egg on the right side of the neck, which was at first suspected to be carotid aneurism. Upon further examination, however, it was believed, from the softness of the tumour, the facility with which it was emptied, and the slight pulsation which it afforded, and that, not being quite synchronous with the action of the heart, that it was disease of the vein, and not of the artery. The absence of *bruit de soufflet* also tended to confirm this view. The patient died a short time after, of disease of the lungs, and the diagnosis was found to be correct." *London Medical Gazette*, 1848, N. S., vol. vii. p. 93.

With these exceptions, I am not aware of any example of uncomplicated varicose enlargement of the vessel in question.

phagus, and that the vein was occluded below the point of ulceration by a limiting thrombus.

CASE XIII.—Mr. Travers, in his essay *On Wounds and Ligatures of Veins*, says: "I have lately seen an instance of obliterated internal jugular vein, by the pressure of a tumour situated deeply on the right side of the trachea, and covering the great vessels. The patient, who was attended and examined after death by Mr. Kingdon, Surgeon, of Finsbury Place, had of late discharged pus and blood, both by the mouth and by the rectum. The tumour was found upon dissection to contain dead cellular substance, and a quantity of blood in a state of putrefaction. The internal jugular vein was filled for some space by a coagulum of blood, but an ulcerated orifice of communication with the cyst of the tumour appeared above the coagulum, so that the blood returning from the head passed in part into the cyst. There was also an ulcerated aperture of communication between the cyst and the œsophagus, and thus the contents of the tumour were, from time to time, passing into the alimentary canal. The artery and par vagum were sound, but the former was curiously defended by a covering of lymph."[1]

Ulceration of the jugular veins appears, from an inspection of the preceding cases, to attack the two sexes with equal frequency, and to be eminently a lesion of early life, since ten of the twelve, in which the age is noted, occurred between the second and thirteenth year, the average being the sixth year, while in the remaining two the patient had attained the age of maturity.

The efficient cause of the destruction of the coats of the vessels was, in eleven instances, diffuse cellulitis following their course; and that disorder must be regarded, in at least ten of the cases, as one of the secondary expressions of the morbid poison of scarlatina, developed immediately after its termination, or during convalescence from it. Acute gangrene of the connective tissue, or diffuse cellulitis, differs from the cellulitis of phlegmonous erysipelas, in that the connective tissue is the original seat of the trouble, while the skin is either not involved at all or only secondarily so, after its vascular supply has been weakened by the destruction of the former. It never occurs in persons in even tolerable health, but is most often observed in children and young adults convalescing from diseases induced by specific organic poisons; as, for example, rubeola and scarlatina, but particularly the malignant variety of the latter affection. In such subjects it is developed out of an enfeebled condition of the system and a vitiated state of the blood, or a constitutional condition of general bad health, closely allied to, if not identical with, a state of septicæmia. It is ushered in either with mild febrile symptoms or with decided adynamic signs. A swelling soon commences, generally at the angle of the jaw, which rapidly extends from the parotid region down the side of the neck, it may be, as far as the clavicle. At first soft and œdematous or boggy, it soon becomes peculiarly hard and uneven; but the skin remains smooth, mobile, and tolerant of manipulation, and is neither hot nor red, although it may have

[1] Cooper's and Travers's Surgical Essays, part i., p. 257. London, 1818, and Philadelphia, 1821.

a glazed appearance. In a few days the exudation appears to have ceased, and, under renewed exacerbations of fever, which now assumes a nervous, typhoid, or pyæmic type, one or more points of fluctuation appear, and the skin becomes thinner and of a dusky red hue. Simultaneously with the breaking down of the exudation, the connective tissue is destroyed, and the skin becomes secondarily gangrenous, sloughs, and gives vent to fetid purulent fluid and shreds of dead membrane.

This affection is very fatal to children, from complete exhaustion, septicæmia, pyæmia, or hemorrhage from ulcerated vessels. If the local trouble be permitted to go on unchecked, all the surrounding structures—muscles, aponeuroses, intermuscular septa, tendons, the bloodvessels and their sheaths—may be destroyed, and hemorrhage from perforation of the jugular veins may be looked for within the first week after the so-called resulting abscess has been evacuated surgically or spontaneously. In two of the cases the bleeding was immediate; in one it was deferred until the seventh day, but the average date of its appearance was the fifth day. After hemorrhage has once occurred, investigation of the preceding cases shows that a fatal result may be anticipated. In three instances it was immediate, two of the children having been found dead in their beds; one was fatal in a few hours, while in six other cases in which the date is recorded, it varied from thirty hours to the fifth day after the first hemorrhage, the average being the third day, and then from repeated recurrence of the loss of blood.

Three distinct pathological processes are probably included in the perforation of the vein. In Case VI. the vessel appears to have been affected with limited necrosis, from the cutting off of its vascular supply, an eschar of upwards of an inch in extent having plainly been visible before the fatal termination. In Case XII. the enlarged and softened internal jugular gave way from the withdrawal of the contents of the overlying abscess, through which it lost its support. In all of the remaining instances the ulceration was due to progressive inflammatory changes, or diffuse (suppurative) phlebitis. It is interesting to note that in only two of the entire number was there thrombosis of the affected vessel. In Case XIII. the coagulum was of a limiting nature; while in Case V., in which death was due to the combined effects of hemorrhage and pyæmia, the affection of the neck had excited thrombosis of the internal jugular vein, and through retrograde changes of the thrombus, secondary obstructions and metastatic deposits. To use the language of Virchow: "These cases show that an abscess may burst through the walls of a vein without intravasation of its contents into the vessel, and that an extravasation of blood is more apt to follow than the establishment of a persistent pyæmia."

The appearance of the ulcer is noted in eleven instances. In Case X. the external jugular vein was "perforated like a sieve, in a space three-quarters of an inch in extent." In Case VIII. there were two openings in the

internal jugular vein, one of about the size of a pea, and a second in the form of a slit half an inch in length. In all of the remaining cases the ulcer was single. In two it was circular in shape, while in the others it was of an oblong or ovoidal form, and varied from four to twelve lines in length. In Case V., in which there was intercurrent pyæmia, there was a small circular opening, and "the lining membrane of the vein, around the aperture, was covered with green lymph, and this again was surrounded by a number of red vessels." With this exception, there were no inflammatory appearances about the margins of the opening, nor of the internal coat of the vessel. In only two cases were the edges of the ulcer irregular or ragged. In the remainder it appeared as if the walls of the vein had been removed by a sharp scalpel.

Although these cases presented certain points in common, yet several were attended with peculiar features, which are worthy of notice. In only two (Cases IX. and X.) did the contents of the vein communicate with a closed abscess, and blood flowed at once upon an incision being made into it. It is scarcely possible to diagnose the presence of venous blood in the sac of an abscess during life, and, in this respect, such swellings differ from those containing arterial blood. In Cases X. and XII. there were, however, some suspicious symptoms. In the former there existed a "certain tremour, which was perceptible by the hand, and noise which could be heard by the ear;" while, in the latter, pulsation was very evident, and it could not be determined whether it was resident in the tumour or merely transmitted to it by the carotid artery. In both cases there were no signs pointing to the presence of venous blood, but a careless examination might have given rise to the supposition of aneurism. Circumscribed effusions of venous blood into the connective tissue of different regions of the body have been mistaken for aneurism by experienced surgeons, two instructive cases of which occurrence are appended in the foot-note,[1] and

[1] Dr. Michaelis saw in the practice of Mr. Pott, of London, a man who was affected with a pulsating tumour at the lower and inner side of the thigh, caused by a violent strain. Mr. Pott thought it an aneurism, and had applied a tourniquet, preliminary to amputation, when he punctured the swelling to observe its nature. He found that it depended upon a ruptured varicose femoral vein, and that the blood lay in a sac formed by condensed connective tissue, with which the vessel communicated, and received an impulse from the femoral artery. The blood was evacuated, and the vein tied; but the patient died of exhaustion consequent upon profuse suppuration.—*Richter's Chirurgische Bibliothek*, B. v. p. 121, 1789.

Mr. Else has narrated the case of a man, twenty-five years of age, who had a swelling in the ham. "He said that it came after his endeavouring to raise a considerable weight, and that he felt a crack where the swelling appeared, as if something had been broken. Some time in December, 1764, this tumour was opened, and, a large quantity of fluid and clotted blood being discharged, it was judged to be an aneurism of the popliteal artery. The limb was instantly amputated, and

Case X. only needed pulsation to have rendered the diagnosis embarrassing.

As in the case with wound of the internal jugular vein, as I have shown elsewhere,[1] the introduction of air into the circulation, through the perforated vessel, might naturally be expected; but that accident was only met with in Case XI., in which the anterior wall of the vein had been destroyed to the extent of six lines. One month prior to the death of the patient, "while dressing her neck, there was slight bleeding, followed by a gurgling sound, with a frothy appearance of blood at the bottom of the ulcer, which induced alarming syncope, from which she gradually recovered under the use of stimulants."

The practical lessons to be deduced from the study of the facts contained in this paper are—

First, that acute, destructive inflammation of the tissues of the neck, and deeply seated abscess, which has existed for some time, and suddenly takes on acute action, may, if unchecked in their progress, lay bare and perforate bloodvessels, and that this result is to be feared more particularly when diffuse cellulitis follows grave forms of scarlatina, or other acute specific diseases.

Secondly, that scrofulous abscesses and ulcers are not always indolent, but may under favourable circumstances, that is, in an enfeebled, broken-down condition of the system, rapidly assume phagedenic action, and lead to the same complication; and—

Thirdly, that the large arterial and venous trunks are more liable to be involved than their branches.

It behooves the practitioner, therefore, to be on his guard, in order that he may direct his measures to prevent the accident, and to arrest hemorrhage when the vessel has been perforated. To fulfil the first indication, an attempt should be made to cut short, or abort, the diffuse cellulitis during the first stage, or that of exudation. For this purpose, incisions should be made through the integuments, or be carried through the deep aponeurosis, if the disease be recognized to be seated below it. They should be as numerous as the necessities of each individual case demand, and be about one inch long, and separated an inch and a half from each other. Made in this way, they give vent to blood and serosity, thereby relieving tension, and are not so liable to be followed by as much loss of blood as when one or two large incisions are practised. Care must, however, be taken to arrest hemorrhage by light and equable compression,

immediately carried to the anatomical theatre," where it was injected, and the arteries were found to be healthy throughout. "The largest internal vein" was ruptured just above a pair of valves, the opening being irregular and connected with the tumour.—*Medical Observations and Inquiries*, 2d ed., vol. iii. p. 174. London, 1769.

[1] American Journal of the Medical Sciences, Jan. 1867, p. 38.

which will also exercise a good purpose by affording support to the affected structures.

During the stage of suppuration or mortification, incisions are imperatively demanded to afford a free outlet for the escape of pus and broken-down tissues, after which it is important to endeavour to convert the gangrenous sore into a healthy, granulating surface. For this purpose, a weak solution of chloride of zinc may be employed, and the parts may be dressed with compresses wet with a solution of chlorinate of soda, permanganate of potassa, carbolic acid, or tincture of opium, if there be much pain, which should be secured by a roller or other retentive measures, gentle support being at the same time afforded. Poultices, which have a tendency to favour free suppuration, thereby still further enfeebling the system, should be avoided.

If the sore, resulting from the destruction of the integuments, affect the greater part of the lateral region of the neck, and the gangrenous action be still progressing, the hot-iron may be lightly applied, as advised by M. Bonnet, of Lyons, who has employed it with immediate and complete success in cases of phlebitis, in which the connective tissue was in a gangrenous state, and for the same condition of the tissues following phlebitis from venesection and dissection wounds.[1]

Attention must also be directed to the improvement of the general condition of the patient by hygienic and medicinal measures, which will include a free supply of fresh air, good, nutritious diet, such as an abundance of milk, beef extract, and animal broths, stimulants, not as food, but as a means of sustaining the flagging powers, and tonics, of which the best is quinia, in combination with the tincture of chloride of iron, or the mineral acids. Irritability, restlessness, and nervous depression are to be allayed by small doses of opium, or subcutaneous injections of morphia.

With regard to the treatment of hemorrhage from the ulcerated vein, little need be said, as all the cases proved fatal. In only one, Case VI., was bleeding to have been anticipated, and it might possibly have been prevented by casting a ligature above and below the dead portion of the vessel. In all instances in which it is possible to apply it, and the disorganized condition of the parts does not contraindicate its employment, it should be resorted to in preference to other hæmostatic agents. It is perfectly safe, and is not open to the objections which can be justly urged against compression, as I have endeavoured to show in a communication on "Wounds of the Internal Jugular Vein," published in this Journal (Nos. for Jan. and April, 1867). The ordinary mode of compression was the only means instituted to arrest the bleeding in the cases reported in this paper, and in all it was utterly inefficient, since sufficient pressure could not be exerted on account of impeding the respiration and provoking

[1] Gazette Médicale de Paris, Avril 15th, 1842.

coughing. Should compression treatment in similar instances, however, be deemed advisable, an assistant, if he be at hand, should place his finger on the vein above the opening, to prevent the further loss of blood. A small piece of sponge is then to be held in contact with the orifice until it adheres, when it is to be supported by a compress retained by adhesive strips. Instead of sponge, a bit of patent lint, wrung out of a dilute solution of persulphate of iron, may be employed, and the entire sore may be dressed with the same material, as it will exercise a beneficial influence in checking gangrenous action, and correcting the offensive discharge.

ART. V.—*Treatment of the Pedicle in Ovariotomy, without Clamp or Ligature.* By G. D. BEEBE, M. D., of Chicago.

THE following hitherto unpublished cases are communicated to the profession, as illustrating what the writer regards an important modification of the treatment of the pedicle in this operation :—

CASE I.—Had been tapped prior to an examination made June 7, 1869. The abdomen was then found greatly distended, a portion of the fluid appearing to be ascitic, while much the larger portion was contained in a polycystic tumour of the right ovary. The patient, American, married, æt. forty-one, had been, as she supposed, dropsical for nearly two years, and was not prepared for the diagnosis given, nor to adopt the recommendation of an early removal of the tumour. In accordance, therefore, with her wish, she was again tapped, and four gallons of fluid removed; the major cyst only being emptied. A hard nodular mass could now be felt occupying the point of origin of the tumour, which seemed to have developed within the cyst.

Aug. 22. After repeated tapping, obtaining three gallons of fluid, and finding the nodular mass greatly enlarged, malignant disease was strongly suspected, and an immediate resort to an operation was urged, but not permitted.

Sept. 19. The patient strongly desired that ovariotomy should be performed, but upon examination the nodular mass had so far enlarged as to fully occupy the abdominal cavity. Pulse 126, and constitutional symptoms urgent. Operative interference now offered but little hope of prolonging life, but since the patient must otherwise speedily perish, an operation was determined upon, and accordingly on September 22, full anæsthesia having been induced by chloroform, an incision of seven inches was made, which allowed the escape of a small quantity of ascitic fluid. With the large canula of Spencer Wells, several of the larger cyst-cavities were emptied, and the remaining mass turned out, after severing some very strong adhesions, one parietal, and two visceral. The pedicle was quite short; nearly round; one inch in diameter. This was ligated with carbolized catgut, a single ligature surrounding the entire stump, its ends cut short, and the pedicle returned. The vessels divided, in severing the adhesions, were all closed by torsion, and especially in the mesenteric

adhesions, these were quite numerous. The incision was closed by quilled suture of silver wire, with a surface-dressing of lint saturated in carbolic oil. Reaction was slow, and the patient remained quite feeble for two or three days, when a mild form of peritonitis set in. Slight tympanitis was observable, but these symptoms quickly subsided, and for two weeks the patient gained in strength, had a fair appetite, and was quite cheerful and comfortable. It then became apparent that malignant disease had attacked the abdominal viscera, and this, interfering with the functions of the bladder and rectum, terminated the patient's life a few days short of one month after the operation.

The nodular mass consisted of an immense number of cysts of various sizes, some containing fluid, others containing a gelatinous substance, together with considerable masses of friable tissue of cerebriform appearance. Portions of this were subjected to microscopic examination, and found to contain the characteristic cancer-cells.

The fluids and solids removed in this operation weighed forty pounds.

CASE II.—The patient, an American, married, æt. forty-eight, was visited at La Crosse, Wisconsin, October 19, 1869. Abdominal cavity greatly distended by a lobular tumour containing numerous cysts, besides several nodular solid masses. Having Case I. in mind, a similar diagnosis was arrived at, and an operation not advised. The patient had, however, fully determined to have it done, as I afterwards learned, in the hope that her intense sufferings might end in death upon the operating-table; and so stoutly did she insist upon it, that I consented. Tapping was resorted to as preliminary for relief to the respiratory organs, and three gallons of fluid withdrawn from the major cyst-cavity. Chloroform was then administered, and the incision made, which was enlarged to eleven inches before the mass could be turned out. Extensive and numerous adhesions existed, both parietal and visceral, one involving the peritoneal investment of the liver. The pedicle, which was short and thick, was divided and its vessels closed by torsion, when it was returned to the abdominal cavity. In like manner the vessels traversing the bands of adhesion were closed by torsion, and after a somewhat protracted operation, occupying two hours from the time the inhalation of the chloroform began, the wound was closed as in Case I.

A portion of the mass was examined microscopically and found to be medullary cancer.

The patient reacted well, much to her disappointment, and with a slight degree of peritoneal inflammation, on the fourth and fifth days, made a rapid recovery from the operation. The cancerous disease, however, redeveloped with great rapidity, and the patient succumbed four weeks after the operation.

The tumour weighed forty-five pounds.

CASE III.—American, unmarried, æt. twenty-three; residence, Champaign, Illinois. Tumour seems to have been originally a monocyst, but when firm pressure is now applied, hard nodular masses can be felt in the deeper portions of the cyst, and the tumour is, therefore, regarded as polycystic. July 26, 1870, assisted by Drs. Cheever and Howard, of Champaign, chloroform having been given, an incision was made, and several of the cyst-cavities emptied, the contents of some being so tenacious as not to flow through the large canula. Extending the incision to five inches, the

mass was turned out, one adhesion existing. The pedicle, consisting of the right broad ligament greatly hypertrophied, was very large. On being divided, the cut surface was somewhat triangular; the base of the triangle containing the Fallopian tube was fully an inch thick, while it was four inches from the base to the apex. This large pedicle was traversed by numerous vessels, all of which were closed by torsion, as were also the vessels traversing an extensive adhesion to the greater omentum. The stump was slipped back, and the incision closed in this case by interrupted silver suture, with the same dressing as in Cases I. and II.

Upon microscopic examination of the mass, numerous characteristic cancer-cells were found, and the patient was directed to take four doses per day, of twenty drops each, of the saturated watery solution of carbolic acid. No unfavourable symptoms occurred, and this patient made a rapid and complete recovery. Six months have elapsed since the operation, and the patient still remains well.

CASE IV.—American, unmarried, aged twenty-five; residence, Dixon, Illinois. Tumour first noticed six months before; was diagnosed "incarcerated wind" by a local practitioner, and had been pretty actively treated for that difficulty during five months.

Visited September 13, 1870, at which time the abdomen had reached the size of pregnancy at term. The abdominal integuments were very hot and quite red. The cyst-wall seemed adherent to the parietes, and there was considerable tenderness on pressure. Through the fluctuating fluid hard nodular masses could be felt. The pulse was feeble, and 130 per minute. Malignant degeneration of a polycystic tumour of the left ovary was diagnosed, and the parents of the young lady were advised that the case had progressed beyond the point where surgical interference would avail much for relief. The statement was, however, made to them that, left to pursue its course, the disease must inevitably destroy life at no very distant day; that there was, perhaps, a shadow of hope that she might survive an operation, and recovery might be considered remotely possible, but the patient would probably die under the operation. Without hesitation the preference was expressed that the operation should be made, in which preference the patient, who was a highly accomplished and intelligent lady, shared. She was accordingly placed at once upon the table, and, assisted by Dr. Steele, of Dixon, Dr. Gordon, of Sterling, and Dr. Phillips, of Dixon, the operation was begun under chloroform. It was difficult to tell when the incision had reached the abdominal cavity, so dense and close were the parietal adhesions of the tumour. Inch by inch these adhesions, which were comparatively recent, were separated by insinuating the fingers, but with profuse hemorrhage. When the parietal surface had been traversed, the larger compartments of the cyst were emptied, and the visceral attachments carefully separated; these were exceedingly numerous, but, like the others, recent. The peritoneum, where not adherent, was highly vascular, and presented a miliary erythema everywhere. The pedicle was small, consisting of the left Fallopian tube and vessels; this was divided without ligature, the vessels closed by torsion, and the stump returned. Wherever vessels could be discovered in the divided adhesions they were likewise twisted, and when the hemorrhage ceased the cavity was cleansed of blood and minute coagula. The inner parietal surface now had the appearance as if covered with detaching masses of sphacelated tissue, so discoloured by extravasation had the lacerated adhesions become. The patient at this

time was cold and almost pulseless; the incision was, therefore, closed as rapidly as possible, as in Case III., the patient removed to a warm bed and surrounded by bottles of hot water, and made to inhale ammonia vapours. Brandy was administered pretty freely, mingled with beef-tea, as soon as the latter could be prepared. The traumatic shock became every moment more profound, but by the persistent use of the above means, coupled with brisk frictions, reaction began six hours after the operation, the sticky perspiration lessened, the surface gradually warmed, and from that time forward the patient did not experience a painful sensation, was riding in her carriage at the end of four weeks, and up to the present time has continued perfectly well. In this case carbolic acid was prescribed as in Case III., and its administration continued for three months.

CASE V.—American, unmarried, aged 21, residence Portage City, Wis. Tumour first noticed four and one-half years ago, is now as large as a gravid uterus at seven months. Tumour so firm and fluctuation so constrained as to suggest the possibility of colloid, though it was diagnosed a monocyst. Operated October 25th, 1870; assisted by Drs. E. C. Main and C. A. Kellogg, of Portage City. Chloroform having been administered, an incision of two and one-half inches was made. The cyst was found to be non-adherent, and was quickly emptied and the empty cyst withdrawn. The pedicle, being upon the left side, consisted of a bundle of bloodvessels in loose connective tissue. This was divided slowly, and each vessel closed by torsion as soon as divided. Seven arterial branches were thus secured, and when on inspection no further bleeding occurred, the stump was allowed to drop back into the abdominal cavity. The incision was closed by interrupted silver suture, and dressed as were the other cases. During reaction the pulse rose to 110. Menstruation came on in the night following, after which the pulse declined to the normal standard, and full recovery followed; the young lady remaining in the enjoyment of good health up to this time.

CASE VI.—American, married, æt. thirty-seven. First observed the tumour in the abdomen a little over six years ago; did not notice that it was more upon one side than the other. Has given birth to two living children since that time, the youngest of which is now seventeen months old. Tumour has grown more rapidly since the birth of the last child, and is now of a size corresponding to a gravid uterus at eight months.

Having made an examination and diagnosed a monocyst of the left ovary, the patient was immediately placed upon the table, and, assisted by Drs. A. G. Beebe, of Chicago, J. A. Steele and S. S. Smith, of Dixon, Ill., the operation was made January 18th, 1871. An incision of three inches exposed the cyst, which was found not to present any adhesions. Its contents having been evacuated, the cyst was withdrawn, and the pedicle found to consist of the entire right broad ligament, showing an error in diagnosis as to the side upon which the cyst was attached. This pedicle was nearly five inches broad, but quite thin, and traversed by numerous bloodvessels; the veins being quite large. Severing a portion of the pedicle at a time, the vessels were seized and twisted as soon as divided; the veins proving the more difficult to close. When at length all were secure, the pedicle was returned to the abdominal cavity, and the wound closed as in the other cases. The patient reacted well; the pulse not rising higher than

72 during the four hours following the operation. On the day following the pulse was 80, after a good night, the patient feeling very cheerful and comfortable. Menstruation occurred on the second day, and from that time no untoward symptom occurred; the patient making a rapid and complete recovery.

The treatment of the pedicle in these cases constitutes a feature of very great interest to the profession. The advantages of torsion, as applied to the ordinary operations of surgery, over ligation of the vessels, is now everywhere conceded, and it has been a matter of surprise that, in ovarian operations where it is so exceedingly desirable to avoid the use of the ligature or other means for the compression of the pedicle, we should not have been more prompt to adopt torsion as a substitute for both the ligature and the clamp. It may be assumed for torsion that it is more safe than the ligature, since its failures occur upon the table, and can at once be remedied; while the ligature fails, if at all, at a later period, and those failures are irremediable. Torsion not only avoids the presence of all foreign substances within the peritoneal cavity, but admits of the absolute closure of the incision, even to the total exclusion of the atmosphere; and when once closed it does not even require inspection until the time arrives for the removal of the sutures, when it will be found to have closed by primary union; at least such was the history, without exception, in the cases here reported.

The writer has observed, in regard to ovarian cysts, what he does not remember to have seen stated, viz: that besides the well-known tendency of monocysts to become polycysts with advanced growth, there exists the further tendency to a cancerous degeneration. While the fluid found in the primary cyst contains more or less coagulable material, the fluid obtained from the secondary cysts is much more highly charged, and in some instances will, upon the application of heat, coagulate to solidity. This has suggested the probability that, as a larger amount of plasma is here produced than attains the full development of normal tissue, degeneration of the exudation corpuscle and medullary carcinoma results. This view of the cancerous tendency of polycysts has given force to the recommendation of an early extirpation. Those whose observations extend over a greater number of cases will be able to confirm or disprove this assumption.

CHICAGO, February 1, 1871.

ART. VI.—*Continuous Extension for Oblique Fracture of the Tibia near Ankle.* By H. F. MONTGOMERY, M. D., one of the Surgeons to the Rochester City Hospital, Rochester, New York.

IN the treatment of oblique fractures of the tibia in proximity to the ankle-joint, with fracture of the fibula, or with separation of this bone at

its inferior articulation, every surgeon of experience has, without doubt, occasionally found it impossible to keep the limb extended to its normal length, and to retain the fractured ends of the bone in apposition. The difficulty has consisted in the inability to apply to the foot the extending band, in a manner that could be borne by the patient. Box splints and side splints, double-inclined planes with foot-boards and with screws, with gaiter and with adhesive plaster, have each and all failed to give satisfactory results. I had until recently come to the conclusion that in such fractures perfect extension was impossible, and that deformity was inevitable.

A few months ago I first adopted a method of applying continuous extension to a case of oblique fracture of the tibia near the ankle-joint; it worked admirably. Since then it has been applied to three other cases with perfect satisfaction. It is simple; it saves the surgeon much labour, anxiety, and annoyance; it is easy for the patient, permits at all times inspection of the fracture without disturbing the limb or discontinuing the extension; and, more than all, the sharp point of the fracture is in its place and at rest, because the extending force is not for a moment interrupted.

By continuous extension is meant extension by means of a weight over a pulley. For many years I have treated fractures of the thigh-bone, without long splints and without sand-bags, by means of from fifteen to twenty-five pounds weight over a pulley. After an experience of more than twenty-five years, I am satisfied that this is the only extension that will effectually accomplish its purpose.

To all other methods there is this insuperable objection, they do not *keep* the limb *extended* to its full length, the bands or straps by which the extremity under treatment is attached to the *fixed* object of extension will slip or stretch, and very soon the extension will be lost.

Extension by weight over a pulley is perfect, never ceasing day or night, giving no pain, and rarely requiring readjustment.

Where the fracture is near the joint, the extension must be by the foot alone, and the plan I have adopted is:—

1. A piece of light wood one-fourth of an inch thick, of the length and width of the foot, is procured. This is to be attached to the sole of the foot. Before doing so, a perforation must be made through it at the point which is in the line of the axis of the leg; through this perforation a strong cord is passed and a knot made in the cord, to prevent its being drawn out. This movable foot-piece, thus prepared, is then placed against the sole of the foot of the injured limb, with the knot of the cord next to the hollow of the foot.

The surgeon now by means of strips of adhesive plaster about one inch wide, passed over the foot and around the foot-piece, secures the latter to the foot, and covers the entire foot (except the toes) with the adhesive

plaster. Over this a "roller" of cotton is passed, to hold the plaster in close contact with the foot. Care must be taken to have the plaster evenly applied, so as not to bear on one edge more than the other. The foot-piece thus attached to the foot will not, probably, need to be reapplied during the three or five weeks that the extension will be required.

2. A straight splint, hollowed out, long enough to extend from the sole of the foot to the upper third of the thigh, with a cushion on it, is placed under the injured limb. A Day's or McIntyre splint (with the foot-board removed), laid out straight, answers the purpose perfectly. The cord attached to the foot is carried in the line of the axis of the limb, to the foot of the bed, where it is passed over a pulley, and to the free end a weight of eight or twelve pounds (as sand in a bag, etc.) is attached. The pulley can be screwed into a board fastened across the foot of the bedstead or into the wall. A compress is laid upon the anterior *surface* of the tibia, and upon this a piece of "binder's board" is placed; around these (the leg and splint) two or three inelastic straps are passed, and fastened by buckles. The thigh is held to the splint by similar means. At the foot of the bed a block is placed, against which the patient rests his sound foot, to prevent himself from sliding down in bed, during the daytime when he is awake. At night a sheet passed between the thighs and fastened at the head of the bed answers the same purpose. The foot of the bedstead may be raised three or four inches higher than the head also. After the apparatus has been adjusted, a strip of light wood is to be fastened across the lower margin of the foot-piece, and resting on the "bed-splint," to keep the foot from rotating to right or left, and to prevent the heel from resting on the "bed-splint." Such an apparatus I have retained on a patient four or five weeks (as long as extension is generally necessary), with great comfort to the patient. Should he complain of pressure on any particular part of the foot, the weight must be reduced, or the particular strap which occasions the pain must be cut at the point of pressure. Oblique fracture of the humerus I have treated in a similar manner, applying the adhesive plaster to the anterior and posterior surfaces of the forearm, with great satisfaction to surgeon and patient. The only objection is that it confines the patient to bed for three or four weeks.

Art. VII.—*On the Corrective Influence of Bromide of Potassium on Opium.* By J. M. Da Costa, M. D., Physician to the Pennsylvania Hospital, etc.

In an article in this Journal for April, 1870 (p. 365), I called attention to the influence bromide of potassium exerts on the unpleasant effects

produced by opium. I propose here to give some cases which led me to form this opinion, and to examine more particularly into the combined action of these valuable agents.

The first case in which I fairly studied the subject was under my charge about two years ago. A lady affected with a most painful enteric malady, and of very susceptible nervous system, was often attacked with seizures of abdominal pain of most severe character. Yet she generally bore them until they exhausted themselves without taking any remedy, or with such slight help as remedies, excepting opium, afforded, rather than subject herself to the distress this medicine caused. It was not fancy on her part; for when at times, on account of the excruciating character of the pain, she was obliged to resort to opium—usually black drop, which, of all preparations, produced the least disturbance—I have stood by her bedside and myself witnessed the effects of the anodyne. There was relief, certainly, of the abdominal distress, but also itching or tingling sensations all over the body, amounting to positive pain; then numbness more or less extended, usually accompanied by a sense of sinking, and a faintness most severe and constant, and uninfluenced, or with difficulty relieved by stimulants. Complete unconsciousness did not occur, or only existed for a minute or two, when she thought she slept, though a slight movement instantly aroused her; but, to use her own expression, she was "alive nowhere except the head and heart." Perhaps the best statement of the result from giving the bromide is afforded by still further quoting my observant and accomplished patient in an extract from a note from her: "I have been sending my thoughts back to the time when opium was my horror, and severe pain as easy to bear as its effects. If the pain was relieved, the faintness would return after twelve, fifteen, or even twenty-four hours from the time of taking the opium. Now, on taking twenty grains of the bromide one-half hour before a dose of the watery extract, and again about two hours afterwards, I am pretty secure." From the first time in which, when giving her the bromide, its influence in preventing the unpleasant consequences of opium was noticed until the present the bromide has not failed us once. On morphia it has least influence, and morphia and codeia always affected her the worst. Still it has an influence, and four doses keep her tolerably comfortable.

A case as striking, though not one in which the observation has been as often repeated, is that of an old lady subject to attacks of diarrhœa, and in whom all opiates, even paregoric, produced faintness, marked, though not so marked as in the preceding instance, but much more decided headache and nausea. By taking forty grains of bromide, in twenty grain doses, beginning about three hours before she takes opium, she bears perfectly well twenty-five drops of laudanum.

Of another case I transcribe the record, as kindly kept for me at the Hospital by my resident physician, Dr. James C. Wilson. It reads thus:—

Annie C., Irish, aged 35, a domestic, widow. Admitted into the Pennsylvania Hospital Feb. 8th, 1871, suffering with anæmia and with impaired digestion, which, however, is not associated with any manifest organic disease; was placed upon tinct. ferri chloridi gtt. xx, t. d., and good diet.

Feb. 12th. Complains of sleeplessness; states that she was awake all last night. This report was corroborated by the night nurse. Was ordered liq. morphiæ sulph. f℥ij at bedtime.

13th. Passed a sleepless night. After taking the morphia she experienced a feeling of great weakness; felt dizzy and confused; described herself as "seeing all kinds of strange things." She had headache as these phenomena passed away, with dryness of the throat and great restlessness, which lasted until morning. On rising she had intense nausea and vomiting, which continued until noon. 2 P. M., given potassii bromid. gr. xxx. 8 P. M., liq. morphiæ sulph. f℥ij as last night. Pulse 128, respiration 28, temperature 100°.

14th, A.M. Pulse 108, respiration 24, temperature 98¾°. States that she slept very well, and feels in every respect quite as well as usual. No dizziness nor headache; no nausea nor vomiting followed the administration of the morphia.

17th, P.M. Pulse 116, respiration 20, temperature 99⅓°.

18th, A.M. Pulse 96, respiration 20, temperature 98¼°. Had taken no medicine, except the tinct. of chloride of iron, since the evening of 13th inst. She again complains of sleeping poorly. Last night she did not fall asleep until towards morning. 8 P.M., given tinct. opii deodorat. gtt. xxv. Pulse 83, respiration 20, temperature 99°.

19th, A.M. Pulse 76, respiration 20, temperature 99°. She states that after taking the medicine last night she felt weak and faint, was dizzy, and fancied that she saw curious and grotesque objects; had no pain in her head, but was restless, and had no sound sleep, although she dozed at times. Had a feeling of faintness and nausea on rising, but no vomiting. 6 P.M., took potassii bromid. gr. xxx; 9 P.M., tinct. opii deodorat. gtt. xxv.

20th. Fell asleep about midnight, and slept well till morning. Had some dizziness, but no feeling of faintness; no confusion or headache after taking the opiate. Had no nausea, vomiting, or faintness on rising.

I will briefly cite one more case, which was very recently under my observation.

A young lady, in whom opium produced most decided faintness and nausea, was attacked with muscular rheumatism, and took laudanum at night to relieve her discomfort. She sent for me the next morning, and I found her with dry throat, giddy, and weak. Prescribing the bromides, partly to counteract the effect of the opium, partly for other reasons, she was enabled to take the opiate without the least inconvenience; and, when a few days afterwards I found that she had been resorting with impunity to an opiate of either Dover's powder or laudanum, every night, I ascertained that, by a misunderstanding of orders, she had continued to take the bromide mixture, in addition to the prescription of acetate of potassa and colchicum, which I had directed to replace it.

I might continue to multiply this narrative of cases, but it will not make the subject any clearer. I shall rather investigate the result, in some special directions, of giving the two remedies. The bromide does not

destroy either the anodyne or the hypnotic effects of the opiate; on the contrary, it rather heightens both, and more particularly the latter. To quote again from the letter of my first patient—"The more bromide I take the sooner do I get sleep after a dose of opium. Two doses of bromide (twenty grains each) are not usually enough to counteract the exciting effects, and procure sleep under five or six hours from the time of taking." The faintness from opium is the phenomenon most markedly prevented; next in the readiness of being influenced stand the headache, vertigo, and nausea, then the itching of the surface, and dry mouth.

The bromide has seemed to me to act best when it is given some hours before the opium, and forty to sixty grains—generally forty grains—prove sufficient. But it also has an action, sometimes, however, markedly less, when combined with opium; and, should unpleasant consequences have accrued from this, the bromide will mitigate their severity. Even the cutaneous itching is favourably influenced, and I have known repeated doses most decidedly affect the faintness. When morphia is used hypodermically, it is then most necessary to give the bromide some time in advance, and it may take larger doses to accomplish the purpose. At least it has so seemed to me—though I have not often tested this, since most of the observations were made in persons who took opium by the mouth.

Now, though I think that the corrective influence of the bromide on opium holds good as a general truth, we meet at times with exceptions. Dr. Wallace, to whom I had mentioned the matter, told me that while he had in several instances obtained the most gratifying results, he had failed in one; and Dr. James C. Wilson has taken notes for me of a patient in the Pennsylvania Hospital suffering from advanced phthisis, in whom sleeplessness, a feeling of confusion, dizziness, and dull throbbing, frontal headache, and nausea and vomiting in the morning were caused by one drachm of the solution of sulphate of morphia. The addition of the same amount of spirits of chloroform obviated the unpleasant results, though it finally failed; and sixty grains of the bromide did not prevent one-fourth of a grain from producing the disagreeable consequences.

But these exceptions are not, I believe, numerous, and the bromide does not often disappoint. Of course, in investigating its value with reference to the questions here discussed, we have to test it on those with whom opium really disagrees, and not on such who merely say that it does; for, from some reason or the other, many persons seem to think it a point of honour to make this statement, though out of ten such persons nine are quite certain to be able to bear the anodyne as readily, and to derive as much advantage from it, as the rest of mankind with whom it professedly does not disagree. Yet, considering the number of therapeutical applications of the invaluable drug, and the fact that we may be prevented from using it in instances in which its employment might be of the greatest moment, because to use it seems impossible, it will be of service to be able to control

its action, and the remarks here made will, I trust, prove to represent the full truth. Moreover, they may be looked upon as a contribution towards a most interesting and comparatively neglected part of therapeutics, what may be called the *corrective influence* of one drug over the other; corrective in obviating its bad results, while not interfering with, but rather heightening, the good ones.

ART. VIII.—*Hydrate of Chloral in Singultus.* By T. L. LEAVITT, M.D., of Germantown, Pa.

No new remedy has perhaps received such universal attention and trial as the hydrate of chloral, and justly so, for during the brief period of its therapeutic existence it has proved wonderfully successful in the very many instances of its exhibition. Numerous are the testimonies of practitioners as to its merits; insomnia, acute suffering, chronic diseases, and even child-bearing, have all been recorded as relieved through its potent agency.

To add one more to the extensive list of sufferings relieved as yet unannounced, I record the following cases of distressing singultus, which the physician has so frequently to contend with in cases of low fever and the general failing of vital power. Wearing and exhausting to the patient, and distressing to anxious friends, any pharmaceutical agent affording even temporary relief is hailed with eagerness, and most especially so after the well-worn changes have been rung unsuccessfully on musk, ether, the bromides, and the antispasmodics in general.

Mr. H., æt. 60, after suffering for many years with an obscure disease, probably having its origin in the spinal cord, finally became so emaciated and debilitated as to be confined to his bed, where, after the first few days of gradual decline, a distressing and obstinate hiccough set in, producing rapid loss of strength and proving of great annoyance to the patient. Sulphuric ether in capsules, bromide of potassium and ammonium in solution, musk, camphor, &c., were all exhibited in turn, but failed to give any permanent relief, for they lost their controlling power after a few trials. The chloral hydrate was then used in five-grain doses in solution, and arrested almost immediately the singultus, and never afterwards failed to control the spasm in a most satisfactory manner, proving of the greatest comfort to the last remaining hours of the sick man.

Two other cases of obstinate hiccough, occurring subsequently in typhoid fever, were treated in the same manner, with the same pleasing result, the patients recovering finally.

It remains, of course, for more extended trial to fully establish this drug among the remedial agents in singultus, but certainly the results in the few cases coming under my notice have proved it to be of the highest value.

ART. IX.—*Notes on Chloral.* By E. F. BEAUCHAMP, M. D., of Vermillionville, La.

CASE I. *Delirium tremens.*—Was called to a stout, athletic man, æt. 30, with incessant tremors, horror, and hallucinations; complete insomnia and loss of appetite. The sleeplessness had existed for nearly three days, and the mental disturbance was evidently on the increase. I ordered the following: ℞.—Chloral hydrat. ʒij; syr. simp. ʒj; aquæ fontan. ʒiij. One-fourth to be given at once in a glass of water, and to repeat every hour until sleep, or at least quiet, was procured. Ordered some broth, of which he drank a small portion. After taking the second portion he became much quieter, and, after the lapse of half an hour, dropped into a sleep, which, although interrupted by muttering and frequent convulsive startings, lasted for three or four hours, when he awoke much quieter, voided his urine, and took a few spoonfuls of broth, after which a third portion was given, which soon sent him to sleep, which lasted for several hours. Upon my next visit I found him quite rational and with some appetite, which he was permitted to satisfy; and with injunctions to be careful, and a light laxative, I discharged the case.

CASE II. *Insomnia accompanying epilepsy.*—A very intelligent gentleman, æt. 36, of full habit of body, a sufferer from epilepsy since his sixteenth year; and although confined to his room from the frequency and severity of the attacks, yet his intellect is unimpaired and his digestion excellent. I was consulted principally for the troublesome and harassing symptom of sleeplessness. I advised the following: ℞.—Chloral hydrat. ℈j; aquæ menth. ʒj; to be taken at bedtime, and to be repeated as needed. This was followed by prompt relief; and under the continued use of the medicine, with occasional doses of bromide of potassium, he has so far recovered as to be able to go out of doors and in a very great measure enjoy the comforts of life.

CASE III. *Convulsions after labour.*—Was called to visit a young and healthy lady two weeks after her first labour, who, twenty-four hours before, had been seized with some pain in right shoulder and neck. The pain affected the right side to the hip, gradually increased and extended to the whole right arm, which I found exquisitely tender; pulse full and soft, high fever, and tongue covered with white fur. Convulsive twitchings had been noticed before my visit, which I found confined to the afflicted side, accompanied with difficulty in speaking, although no impairment of the intellect; some tenderness over the hypogastric region, and loss of appetite. The convulsive movements rapidly increased in severity, and, believing severe convulsions to be imminent, I ordered: ℞.—Chloral hydrat. ʒss; syr. simp. ʒj. To be given at once; to be repeated in one hour, if needed, and a pill of the following every four hours: ℞.—Hydrarg. chlor. mit. ℈j; pulv. ipecac. gr. vj; extr. conii gr. vj.—M., ft. pil. vi. The chloral had the effect of promptly arresting the nervous trouble, and it did for three or four days on the occurrence of the symptoms, and she was fully restored to health at the expiration of thirteen days.

CASE IV. *Mental excitation terminating in delirium, with no febrile excitement.*—Called in consultation to a young man, æt. 21, very tem-

perate, accustomed to a great deal of out-door life, who had suffered from a mild attack of tertian intermittent while absent some distance from home, and, being exceedingly anxious to return, took, at the suggestion of some friend, a few doses of quinia in whiskey, which arrested the paroxysms, but left his nervous system very much disturbed. This last trouble gradually increased until, at the expiration of ten days, he became delirious. When I saw him his skin was warm, but not above the healthy standard; pulse slightly accelerated in frequency; tongue slightly coated. No appetite, and a constant disposition to talk incoherently of his affairs, and some tendency to sleep; yet he recognized all who approached him. Finding some puffiness about the abdomen, and a tendency to diarrhœa, I advised the use of the following pill every six hours: ℞.—Pil. hydrarg. ℥ss; pulv. Doveri gr. x; pulv. extr. krameriæ gr. xv; extr. hyoscyam. gr. viij.—M., ft. pil. x. And to take the following at once: ℞.—Chloral hydrat. ℈j; syr. simp. ℥j; to be repeated at bedtime if quiet was not procured. The first dose of chloral produced nausea and vomiting, but its repetition was followed by quiet sleep and a great diminution of the cerebral trouble; and on the following day the other medicines were stopped, and under the use of the chloral alone he was rapidly and completely restored.

I have had many opportunities in the past twelve months of testing the properties of chloral as a soother of pain in facial, spinal, and visceral neuralgia, and, either alone or in combination with bromide of potassium and chloride of iron, it has, with but few exceptions, answered admirably, in most cases decreasing the force and frequency of the pulse, lowering the temperature of the body, and leaving none of the unpleasant effects which generally follow the use of other narcotics; and although it does not supplant opium and other narcotics, I regard it as one of the best hypnotics which we possess, and believe that a more extended trial will entitle it to a very high rank as a pain-soother, particularly in nervous disorders.

ART. X.—*Tubercular Pneumonia.* By D. FRANCIS CONDIE, M. D., of Philadelphia.

NOTWITHSTANDING that everything relative to the etiology, pathology, pathognomonic symptoms, therapeutic and hygienic management of pulmonary tuberculosis, has been subjected to the most careful investigation by some of the most reliable observers, whose researches have been fully laid before the profession, still it seems to us that a very large number of physicians, even some distinguished teachers, have entirely overlooked the fact that for the production of *phthisis pulmonalis* the mere deposit of tubercles in the tissues of the lungs will not suffice, but that in every case there must be the concurrence of an error of the nutrition—tuberculization—on the one hand, and, on the other, an inflammation, usually chronic or subacute in character, though in many cases eminently acute.

That the disease known as pulmonary phthisis is not, as is so generally supposed, the result solely of the presence of tubercles in the lungs, all, we believe, will be convinced by a careful study of its pathognomonic symptoms, its progress, and its most common termination, with an investigation of the lesions discovered upon an examination of the lungs after death. In many instances, where death has taken place suddenly from various appreciable causes, we have detected the existence of tuberculization of the lungs; occasionally, to some considerable extent, where not a single symptom had been noticed during the lifetime of the patient indicative of the presence of what would be denominated, in common parlance, "confirmed consumption," or, indeed, of any common pulmonary disease.

Pulmonary consumption (*phthisis pulmonalis*), in the strict acceptation of the term, is never developed with all its pathognomonic symptoms until some grade of inflammation is set up in a lung which is already the seat of tuberculization. In many of the cases inflammation plays so predominant a part that the name *tubercular pneumonia* might, with great propriety, be applied to them. In such cases the disease very generally runs its course to a fatal termination with great rapidity.

Tubercles, when deposited in the lungs to any extent, give rise usually, sooner or later, to a marked disturbance of the healthy play of many of the functions of the living economy, superadded to that defect of nutrition throughout every portion of the body, incident always to the peculiar diathesis to which tuberculization appertains: there is more or less dyspnœa, especially when exercise is taken, a short dry cough, a dry skin, susceptibility to chilliness, hectic fever, generally a small, rapid, feeble pulse, night sweats, progressive and finally extreme emaciation, colliquative diarrhœa, terminating—after a more or less protracted course—in death.

Whenever the deposition of tuberculous matter occurs slowly and dispersed throughout a large portion of the substance of the lungs, and the patient is able to take an adequate amount of appropriate food, and is constantly surrounded by favourable hygienic conditions, among which stands prominently a dry, temperate, equable atmosphere, and daily active exercise in the open air, symptoms of disease of a serious character are comparatively long in presenting themselves; almost invariably the case follows a slow insidious course, and, with a slowly increasing exhaustion of the physical and vital powers of the system, the patient lingers on, year after year, before death takes place.

When at any one portion of either of the lungs, or both, a large number of tubercles are deposited in close proximity to each other, they, sooner or later, acting as foreign bodies, produce a low grade of inflammation in the thin layer of lung tissue interposed between the individual tubercles, which becomes in consequence gradually destroyed. The mass of tubercular matter, thus formed by the aggregation of the separate tubercles, becomes, after a time, softened and disintegrated, and if a large bronchial ramifica-

tion passes in its immediate vicinity, a communication between the cavity of the vomica and the bronchi may be formed, attended with an expectoration of a puruloid fluid, mixed with particles, more or less numerous, of a cheese-like appearance. In this manner the entire mass of tubercular matter may be discharged from the lung, and when the other portions of the organ are free, or very nearly so, from tubercles, and the patient at the same time is placed under favourable hygienic circumstances, the sides of the vomica, left by the discharge of the softened tuberculous matter, gradually coalesce and form a kind of cicatrix. In such cases, which we have reason to believe are of more frequent occurrence than is generally supposed—we have met with several in our own practice—there may take place a return to a comfortable or even entire state of health. In, however, the majority of cases of tuberculous disease of the lungs, the deposition of tubercles, varying in size at different points, occurs in patches of greater or less extent, disseminated throughout a large portion of one or both lungs. These run the same course as above described, in reference to the larger and more circumscribed deposits of tubercular matter, and form numerous separate vomicæ, but few of which however having any outlet for the discharge of their contents, their presence excites an irritation of the surrounding tissues, which, passes over ultimately into subacute inflammation, attended with a constant cough, copious expectoration, hectic fever, night sweats, &c. The vitality of the system is thus gradually exhausted, and finally ceases. This is the condition of things which is met with in the majority of the chronic cases of pulmonary consumption.

When, however, a patient, affected with tuberculosis, is, from exposure to cold and damp, or to sudden transitions of atmospheric temperature, or from deficient clothing, attacked with bronchitis or pneumonia, the course of the disease towards a fatal termination is very rapid, as well on account of the crippled condition of the tuberculated lung, rendering it incapable of sustaining the inflammatory process set up in its tissues until a favourable close occurs, as from the depressed vitality of the entire system, which is invariably attendant upon tuberculosis, precluding a resort to the therapeutic means adapted to arrest the inflammation of the lung tissues previously to their entire disorganization.

To this latter class of cases we believe the term "*tubercular pneumonia*" is most appropriate. Thus named, we are convinced that it would lead to a more correct conception of their true pathology—their recognition as cases of inflammation seated in the tissues of a tuberculosed lung—an inflammation which has been excited by causes altogether independent of, though modified in its character, march, and termination by the tubercular condition of the tissues in which it is seated. Inflammation, when occurring in other tuberculosed tissues, has already been recognized in medical nomenclature as tubercal, a phrase which, though not absolutely correct, is useful as pointing out an important fact to be kept in view in

forming our diagnosis and determining our plan of treatment. The profession almost universally recognize the convenience of the terms tubercular meningitis, tubercular peritonitis, &c.; why not also, then, tubercular pneumonia? indicating, respectively, inflammation seated in the tuberculosed meninges of the brain, in a tuberculosed peritoneum, in tubercular lungs, &c.

Every practitioner must have met, as we have repeatedly, with cases in which the deposition of tubercles in the tissues of the lungs had been going on for some time unsuspected by the patient or his friends—the slight cough, the progressive emaciation, the gradual reduction of strength, the slight afternoon exacerbation of fever, with circumscribed coloration of the cheeks, and the other indications of slowly declining health, being referred to causes altogether irrespective of the serious mischief going on in the lungs, until, from exposure on the part of the patient to a cold and damp atmosphere when inadequately clothed, to a sudden unexpected change from a dry, mild state of the weather to one chilly and damp, or from any other cause, he becomes attacked with bronchitis or pneumonia, all the pathognomonic symptoms of what is popularly denominated "confirmed consumption" become, with great rapidity, developed. It is this circumstance—pneumonia occurring in subjects affected with pulmonary tubercles—that has led certain pathologists into the error of classing tubercular deposits in the lungs among the results of inflammation when it attacks those of a strumous diathesis. In this error they believe themselves to be confirmed by the fact that, in individuals predisposed to pulmonary tuberculosis, in whom inflammation of the lungs occurs, which in such patients almost invariably assumes a subacute or chronic form, tubercles are liable to be developed in the lungs either during the protracted course of the inflammation, or as its sequela, particularly if the inflammation is mismanaged hygienically or therapeutically.

The correctness of the views advanced in this paper we have satisfied ourselves of by the facts developed during a somewhat extended series of clinical observations, and they are, in our estimation, of a highly important character, inasmuch as they lead to a correct estimate of the true prophylaxis in those cases in which there is reason to believe that the occurrence of pulmonary tuberculization is to be apprehended or has already taken place. It must be evident that, in such cases, to insure the patient's safety, all those causes which have a tendency to produce inflammation of the lungs must be carefully avoided. Whenever circumstances will permit, the most prudent course will be the removal of the patient from a damp, changeable climate to an inland location, where the air is dry, pure, and of an equable and moderate temperature. The patient should avoid confinement in close, overheated apartments, or sedentary occupations in those which are damp and chilly. On the contrary, he should be urged to take daily active exercise in the open air, on foot or on horseback, properly clothed. He should occupy, as sleeping apartments,

dry, well-ventilated chambers; he should make use of a full diet of nutritious, easily digested, and plainly cooked food; the daily use of the bath, either tepid or warm, as the one or the other accords best with the feelings of the patient, followed by brisk friction of the entire surface of the body with a coarse towel or flesh-brush; and, finally, by the cultivation of a cheerful, buoyant, hopeful disposition. By the course here laid down many individuals, with a strong predisposition to tuberculization of the lungs, may be saved much suffering, and their lives prolonged to an advanced period with comparative vigour and entire comfort.

ART. XI.—*An Effectual Method of Compressing the Uterus, so as to promptly arrest dangerous Post-partum Hemorrhage.* By J. C. HUBBARD, M. D., of Ashtabula, Ohio.

BY referring to the number of *The American Journal of the Medical Sciences* for October, 1870, p. 491, it will be noticed that Dr. Robt. Barnes, in connection with a discussion of a partially novel means for arresting hemorrhage, such as we are considering, casts doubts upon the utility of the most approved methods hitherto employed by obstetricians, as follows: Ergot "too often fails;" "cold applications lead to pleurisy, peritonitis, or broncho-pneumonia;" kneading the uterus "is liable to cause metritis;" compression of the abdominal aorta is, at best, "a momentary resource;" plugging "cannot be trusted;" faradization "was often intensely distressing to the patient;" "turning out the clots was very good in its way, but did not answer the purpose." It will be observed that he does not entirely condemn these means as useless, and would doubtless admit that, while their employment very often fails to arrest dangerous flooding *promptly*, yet, in the course of a few hours, dreadfully long and terrible hours they are, they seem to succeed in a large number of cases; and had he qualified his position against these prevalent usages, by saying that they were *too slow* to be trusted in the presence of imminent danger, we think that nearly all practical obstetricians would coincide with his opinion.

These remedies, upon which Dr. Barnes casts doubts, fail in giving relief *promptly*, even when aided by other agencies of acknowledged merit; and we think every obstetrician of much experience can vividly recall many severe cases of flooding in which he has tried nearly all the means commonly resorted to on these occasions, hour after hour, before the escape of blood could be thoroughly stanched, and such a degree of reaction brought about as to insure a tolerable safety for the life of his patient. The first indication for treatment is to insure contraction of the uterus, as nearly tonic as possible; but as all known means, excepting compres-

sion, will not fulfil with *promptness* and certainty the essential indication, we are obliged to resort to it, and to maintain it, till a permanent contraction takes place. A partial or an irregular and uncertain compression will not do. The following directions will enable the practitioner, or some person under his direction, to so compress the uterus with one hand, by exerting a power equal perhaps to from six to twelve pounds' weight, that dangerous flooding will be promptly arrested.

Let the patient be turned partially upon either side, say at an angle of twenty-five degrees from the supine position, and be securely propped. The practitioner can now sweep the uterus into the dependent iliac fossa. By sprawling his fingers a little he can cover and half grasp it. This position affords the posterior surface of the uterus a well-cushioned bony depression. Once fairly placed, it will not slip away from the hand. The external and superior borders of the organ receive counter-pressure; the former from the transversalis, internal abdominal, and the quadratus lumborum muscles; the latter, *i. e.*, the fundus uteri, is pressed also in part against the quadratus lumborum muscle, the bodies of the fourth and fifth lumbar vertebræ, their lateral processes, and the lumbo-iliac and lumbo-sacral ligaments. The hand of the operator of course completes the uniform pressure as it is applied to the anterior surface of the womb, and is made to partly overlap its internal border. If the uterus cannot be readily crowded into the proper position, because it slides into the pelvic cavity, it can be carried up and placed, by the aid of two fingers inserted into the vagina. If a considerable portion of the uterus juts below the linea iliopectinea, thus escaping pressure, it can be supplied by the fingers in the vagina. The force should be applied so as to thrust the jutting part directly forward against the abdominal wall. Pressure enforced in this systematic manner does immediately and permanently arrest dangerous hemorrhage.

It is not so painful as a like amount of force is when applied to the uterus in other positions. It does not prevent a free return of the venous circulation of the pelvic organs, and we can say, from repeated observation, that this method of depression will generally excite lasting contraction in an hour at least after the expulsion of the placenta and the large clots are turned out, if it is applied before the contractility of the womb is wasted by excessive loss of blood. There is often some difficulty in properly placing the uterus in obese patients.

ART. XII.—*A New Clamp in Ovariotomy.* By WASHINGTON L. ATLEE, M.D., of Philadelphia. (With two wood-cuts.)

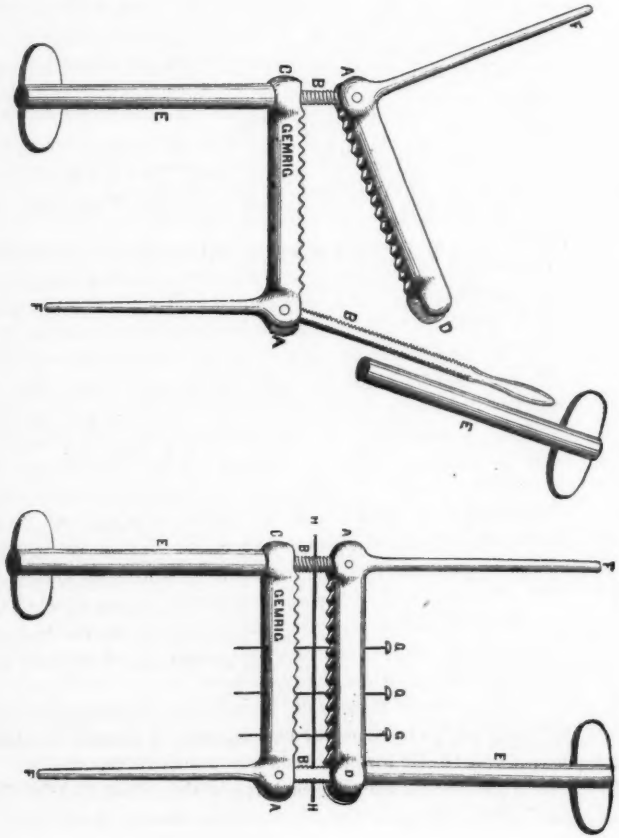
IN my numerous operations for the removal of the ovary I have tried every method of securing the pedicle, except that of *pocketing it*, and I

have arrived at the conclusion that the clamp is the safest, best, and most successful in its results. I believe this accords with the experience of Mr. T. Spencer Wells, of London. It is, therefore, of some importance to select that form of instrument which will best meet the objects to be attained. Until recently I have used the one employed by Mr. Wells in his earlier operations, simplified in its mechanism, but essentially the same in action. This clamp, when applied, has a position at right angles with the direction of the wound, and, in compressing the pedicle, spreads out the latter to the extent of one or two inches, and necessarily forces open that portion of the wound, more or less, according to the size of the pedicle. To obviate this, in thick pedicles, I adopted the plan of surrounding them first by a ligature, and then applied the clamp at the point thus compressed. In this way the spreading of it *transversely* to the wound is diminished, but yet its action is always in that direction. Mr. Wells has invented a circular clamp to meet the same objects. Still, the results are not quite satisfactory, particularly with a large pedicle, as the lips of the wound are not sufficiently approximated.

To overcome these objections, I have modified the form of the clamp so that the pedicle may be compressed in the *linear* direction of the wound, and at the same time to limit, within certain points, the expansion or spreading of the pedicle when the blades of the clamp are screwed together. By referring to the accompanying engravings, the application and action of the instrument will be readily understood, and its superiority over other clamps will, I think, be acknowledged. It is much smaller, lighter, and stronger than the old clamp. The fenestrum is only one inch and a quarter in length, and this can be reduced to one inch, three-fourths of an inch, and half an inch, according to the bulk of the pedicle, by merely shifting the pin to the corresponding holes through both blades of the clamp. In this way the clamp may be graduated to any sized pedicle. As there is a hinge-joint at both ends of the clamp, the blades may be separated to any desired extent in order to receive the pedicle. When slipped over the pedicle, the latter is inclosed in the fenestrum by adjusting the screw B in the slit D, after which the pedicle may be crowded into one end of the clamp, and the pin G inserted through one of the holes in the opposite blades so as to shorten the fenestrum in accordance with the size of the pedicle. When thus arranged, it is plain that upon screwing the blades of the clamp together the pedicle cannot spread beyond the pin G, and at the same time will be compressed in the smallest possible space, and, what is of paramount importance, *in the direction most favourable for the approximation of the edges of the wound.* In adjusting the clamp, the graduating pin should always be below the pedicle, towards the pubes, in order that the wound may be free for inspection above the pedicle.

One figure represents the clamp open to receive the pedicle, and the other figure shows its adjustment on the lower part of the wound ready to be

screwed up against the pedicle in its grasp. A A are hinge-joints with the male screws B B attached. At C one blade of the clamp is perforated to allow the male screw B to pass through, while at D the other blade is slit open, to permit the other male screw B to be adjusted or detached. E E are tubular female screws, with thumb-pieces, which slip over the male screws to secure the plates of the clamp. F F are permanent arms, merely for the purpose of steadying and balancing the instrument when applied to the abdomen. G G G show the application of the pin at the respective distances required before screwing up the clamp against the pedicle. H H represent the wound after the clamp is adjusted and ready to be tightened. The engraving represents the exact size of the instrument. It was made by Mr. Gemrig, 109 South Eighth St., under my instructions, and is kept for sale by him.



ART. XIII.—*The Antagonism of Poisons.* 2. *Antagonism of Morphia and Atropia.* 3. *Antagonism of Strychnia and Prussic Acid, Tobacco, Morphia, &c.* By JOHN J. REESE, M. D., Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania.

IN the January number of this Journal, I examined the subject of the antagonism of morphia and prussic acid, as illustrated by several experiments made upon dogs with these two toxical agents. The conclusion arrived at was that morphia does not materially modify the poisonous action of hydrocyanic acid, unless it be in large excess of the latter, and not even then, if the acid has been taken in a full poisonous dose; so that if these two substances should ever be administered together with a homicidal intention, and with the expectation that the effects of the more violent of the two—the prussic acid—would be masked by those of the other, there would be a disappointment in the expected result, inasmuch as the characteristic symptoms of the prussic acid would in nowise be concealed nor interfered with by the morphia.

In the present paper I propose to discuss first the question of the antagonism of *morphia and atropia.* Before citing any experiments, however, it may be proper first to determine the true action of atropia on the human system.

I believe all writers agree that belladonna, with its alkaloid atropia, is to be classed among the "stimulant narcotics," called by some "delirifacients," from the circumstance that active or violent delirium is one of its prominent manifestations; convulsions are mentioned by most authorities as also frequently occurring among other symptoms. Christison, Trousseau & Pidoux, Tardieu, Pereira, Wood & Bache, Stillé, Taylor, Wormley, and others allude to this particular symptom with more or less emphasis. Dr. Guy states (*Forensic Medicine*, 3d ed., 1868, p. 511) that "in fatal cases death is ushered in by comatose symptoms, but rarely by convulsions;" also, "*trismus and subsultus tendinum* are recorded among the nervous symptoms of occasional occurrence." Dr. Fraser (*Trans. Royal Soc. of Edin.* 1869, p. 483) asserts that "in mammals"—man is not specifically mentioned—"fatal doses of atropia invariably produce spasms and convulsions." This assertion is sustained by two experiments made by himself on dogs, and by two performed on similar animals by Dr. Lemattre, and reported from the *Archives Générales de Médecine*, 1865, vol. ii. p. 175. In the first of Dr. Fraser's experiments—

"Eight grains of sulphate of atropia in solution were injected under the skin of a dog weighing fifteen pounds; slight paralysis was observed in 20 minutes, and feeble spasms occurred in 40 minutes; they, together, reached their maximum intensities in about 70 minutes, and the spasms ceased at 100 minutes, while the paralysis continued until about 120 minutes. The dog recovered perfectly."

In his second experiment,

"A solution containing fifteen grains of sulphate of atropia was injected under the skin of a dog weighing nine pounds; partial, but distinct, paralysis was first observed in 11 minutes; and spasms, with increased reflexed excitability, in 16 minutes. They both gradually increased in severity—the paralytic action causing inability to stand in 22 minutes, and the spinal-stimulant producing the first of a series of frequently recurring tetanic convulsions in 19 minutes. Death took place 1 hour and 20 minutes after the administration."

In Dr. Lemattre's cases (*loc. cit.*) both experiments were performed by injecting the atropia-solution into the jugular vein. In the first instance the dose was one decigramme (1.54 gr.).

"In 6 minutes paralytic symptoms occurred, which gradually became well marked and severe; and in 2 hours and 40 minutes '*une convulsion réflexe*' followed, pinching the skin. This dog recovered."

In his second experiment the dose was five decigrammes (7.7 grs.).

"In about 5 minutes paralytic symptoms were observed, and in about 1 hour and 10 minutes some spasms occurred. The paralytic symptoms became very obvious soon after their first appearance, while the spinal-stimulant reached more gradually such an intensity as to cause *frequent tetanic convulsion*. This dog died 6 hours after the administration."

Dr. Fraser, in the valuable article just quoted, lays peculiar stress upon the remarkable property of atropia to produce the twofold effect of paralysis succeeded by tetanic convulsions. He considers it to be, when given in large doses, at the same time both a paralyzer and a stimulant to the cerebro-spinal nervous system. His experiments made upon frogs and other cold-blooded animals are very interesting, and demonstrate the fact that these animals are much more susceptible to the paralyzing action of the poison than to its convulsive effects; whilst dogs and other mammals manifest less susceptibility to the paralytic action than to the excitant. My limits will not permit me further to detail the observations of Dr. Fraser on this subject. His whole paper will amply repay a perusal.

I will now record the results of my own experiments, made first with atropia alone, and afterwards with morphia and atropia combined.

Expt. 9. *Atropia alone.*—Injected three-quarters of a grain of atropia in solution, hypodermically, into a moderate-sized dog. No apparent effect produced in 10 minutes. In 13 minutes, evidences of dryness of the mouth, but no dilatation of pupils. In 15 minutes, the pupils widely dilated, but no other effect; in 25 minutes, repeated the dose as before; in 1½ minutes, there was loss of muscular power; in 2 minutes, lies down; tongue very dry; breathing extremely rapid and panting; appears to be perfectly blind; great loss of muscular power. In 30 minutes, utters occasional cries; can still stand upright, but drags his hind legs on attempting to walk. In 40 minutes, moans incessantly; runs around in a circle. In 50 minutes, continues yelping and panting; pupils extremely dilated; can scarcely stand upright. In 1 hour, again yelping and panting; drags his legs in walking; dilatation of pupils continues. In this condition I was obliged to relinquish further experiment, and the animal was subsequently destroyed.

Remarks.—All the recognized symptoms of belladonna-influence upon the human system are shown in this case, with the exception of the

maniacal delirium. The dilatation of the pupils, the blindness, the dryness of the tongue and fauces, were all very apparent. The paralyzing influence of the atropia is also shown by the great loss of muscular power, by the inability to stand upright, and by the dragging the hind legs on attempting to walk. What is, however, especially noticeable, both here, as well as in the experiments just recited, is the great toleration of the poison; one grain and a half of atropia having been administered and the animal, at the expiration of an hour and a half, not yet dead, nor even exhibiting absolutely fatal symptoms. This remarkable tolerance of the poison by the dog will be more strikingly illustrated in the course of my succeeding experiments.

Expt. 10.—Four grains of atropia, dissolved in one fluidrachm of water, with the aid of acetic acid, were injected under the skin of a moderately-sized dog. The animal evinced unusual signs of pain and resistance to the operation. In 10 minutes, no material effect was produced, except dilatation of the pupils and a disposition to urinate. In 13 minutes, shows a slight unsteadiness of gait; bladder again evacuated. In 20 minutes, seems to stand with difficulty; retches; urinates. In 25 minutes, is scarcely able to stand; responds to call. In 35 minutes, lies down for the first time, but responds to a call, wagging his tail. In 36 minutes, falls forward on attempting to walk, but recovers himself. In 40 minutes the paralyzing effects are well marked in the hind legs and in the tail, which hangs perfectly drooping. He falls with his hind legs in an unnatural position. In 42 minutes, is fairly down, but can be partially aroused.

In 45 minutes, the dose (four grains) was repeated hypodermically; he makes strong resistance to the operation; is aroused by it, standing up and running about howling. In 5 minutes, vomits; is able to walk; appears to be blind; barks and retches. In 10 minutes, the paralytic effects seem less marked than before; walks about uttering short yelps.

In 15 minutes, is again fairly down; respiration slow and laboured—10 to 12 per minute, irregular; eyeballs strongly drawn down; eyes much injected. In 25 minutes, lies quiet; respiration sixteen, somewhat laboured; eyes closed. In 45 minutes, or one hour and a half from the administration of the first dose, he remains in the same condition, perfectly quiescent; he is evidently conscious, looking up and pricking up his ears when sharply called. One hour later, he appears to be somewhat recovering.

In this state (10 o'clock P.M.) he was left until the following morning, when, at 8½ A.M., he was found almost perfectly recovered, wagging his tail and running about with a scarcely perceptible halt in his gait. He drinks water moderately, but refuses to eat.

Four hours later, his condition is about the same; he still refuses to eat; has vomited; but is quite lively, though evidently weak; pupils still strongly dilated. There has been no spasm, nor any approach to a convulsion from the first. Seven hours later still, or 24 hours after the administration of the first dose of atropia, the animal seemed to be perfectly recovered, taking his food and drink with avidity; pupils still strongly dilated. On the following day, the dilatation of the pupils was still very marked; in other respects, the animal was perfectly well.

Remarks.—In this experiment, a moderate-sized dog took eight grains of atropia, in two separate doses of four grains each, within forty-five minutes, from which he perfectly recovered in twenty-four hours, with the single exception of a continuance of the effects of the poison upon the iris, causing dilatation of the pupils. The tolerance of the poison seems certainly remarkable when we consider how very much more impressible

is the human subject by this potent agent. The paralyzing influence, although very well marked, was certainly no greater (if as decided) than in the subject of the last experiment (*Expt.* 9), which took the comparatively small dose of 1½ grain, yet with very decided loss of muscular power. This experiment does not seem to confirm Dr. Fraser's observations in regard to large doses of atropia producing *convulsive* effects upon mammals, since there was not the slightest approach to a spasm observable, from the beginning to the end.

Expt. 11.—In this experiment a still larger quantity of atropia was administered, viz., fourteen grains; the subject of this heroic dose being the same dog which had the day previous recovered, after taking eight grains of the same poison.

Six grains of sulphate of atropia in solution were injected, hypodermically, in the flank. In 5 minutes, the pupils were widely dilated. In 10 minutes, no other effect; is quite lively, frisking about. In 20 minutes, condition the same. Now gave four more grains in the same manner. In 5 minutes, no further perceptible effect; jumps about, snapping at the flies; seems to see perfectly well. In 15 minutes, condition is unchanged; quite lively; drinks water; pupils moderately dilated. In 20 minutes, again drinks; no paralysis yet observable. In 30 minutes, condition the same; again drinks. Now administered four grains additional, making fourteen in all. In 10 minutes (or one hour from the commencement of the experiment), no perceptible effect, except the dilatation of the pupils; appears as lively as before. In 40 minutes (or one hour and a half from the commencement), he first exhibits signs of weakness; retches frequently; takes no notice. In 30 minutes later, seems evidently weaker, standing up with difficulty, and moving about stiffly; retching continues; refuses to drink; whines slightly. Five minutes later, he does not respond to call; eyes only slightly injected, and not closed. In 10 minutes after, he lies quiet, but gets up when touched; breathes naturally; has slight startings, apparently involuntary. In 15 minutes later, there is no apparent change, except that the breathing is heavy. In 15 minutes after, responds to call sluggishly; appears drowsy; starts as if afraid, when patted. Forty-five minutes subsequently, or 3¼ hours from the first administration, no decided change was noticed; stands up, but not firmly; weakness, particularly in the hind legs; sits on haunches, bearing his weight upon the fore legs; tumbles over, but regains his position several times; finally lies down; quivers all over, as from cold. One hour later, seems to be more under the influence of the poison; tries to vomit; is extremely weak in his hind legs; keeps his eyes closed, except when spoken to. In 15 minutes afterwards, the weakness still continues, but gets up and pricks up his ears when sharply spoken to; stands quivering and twitching; breathes with great efforts.

Six hours from the commencement of the experiment, he appears much the same, except that his respiration is now natural; trembles when touched, and seems affected much in the same way as if just beginning to feel the impressions of strychnia. He lies down perfectly quiet; responds to call, pricking up his ears. Half an hour later, he lies quietly, showing some nervous twitches about the abdomen and ears; gets up when called. In 15 minutes, is scarcely able to stand, but tries to keep on his feet.

In eight hours from the first dose, he appears to be much improved; rouses very readily on being spoken to; ears erect; wags his tail; stands up very well, though still somewhat weak in the legs.

Next day, eighteen hours after taking the first dose of atropia, his improvement was very marked; he was very lively, running about; quite firm on his legs; drinks water; vomits occasionally. One hour later he seems rather weak; pupils much dilated. He remained in this state throughout the day, occasionally vomiting; running about quite lively, though still somewhat weak took food towards evening for the first time.

On the third day—forty-two hours from the administration of the first dose, he seemed perfectly recovered; very lively; eats and drinks freely. The only peculiarity noticed was inability to bark aloud; there seemed to be a true aphonia. The pupils also continued to be dilated.

Remarks.—Several points of interest are presented in the above case. The most noticeable one is the wonderful tolerance of the poison by the dog. Fourteen grains were administered within one hour, and yet the animal perfectly recovered. In one of Dr. Fraser's experiments, already quoted, fifteen grains destroyed a dog, weighing nine pounds, in one hour and eighteen minutes. I was almost inclined to believe that the specimen of atropia employed in the experiment was not of the proper purity, but the character of the manufacturers from whom it was obtained would preclude this supposition.

I think that we are fairly warranted, from such examples, to assume that certain results exhibited in experimenting upon those animals which most resemble man in their organization, such as the dog, the rabbit, &c., cannot be certainly predicated of the human subject; that is to say, that because we find that such and such effects follow the administration of certain powerful drugs on some of the lower animals, *therefore* we are justified in presuming that precisely similar effects would be exhibited by man, if he were placed under the same influences. The horse, for example, will tolerate an enormous dose of strychnia with impunity; the dog, as we have just seen, will bear a most heroic dose of atropia; and the pigeon, as shown by Dr. Mitchell, can scarcely be affected by the very largest dose of opium. The experiments of Dr. H. C. Wood, Jr., reported in the January number of this Journal, go to show a similar resistance by pigeons to the action of atropia; some of the birds exhibiting no toxic symptoms after receiving as large a dose as three grains, by subcutaneous injection. Another curious result of these experiments of Dr. Wood was the failure of the atropia to produce dilatation of the pupil. This is not the case with dogs.

Another point of interest connected with the above experiment is the comparatively slight paralyzing and nervo-excitant effects produced by this large dose of atropia, and also the great delay in their manifestation. It will be seen that an hour and a half from the administration of the first dose elapsed before the animal exhibited any signs of the paralyzing influence of the poison; and the first evidence of the nervo-excitant influence, as indicated by tremblings and startings, did not occur for one hour later still; and, what is very curious, the paralytic effects were absolutely less strongly marked than they were previously in the same dog, while under the influence of *eight* grains of atropia; and even less than in the animal which was the subject of Expt. 9, who took only one grain and a half of the poison, with very decided manifestations.

Expt. 12. *Morphia and Atropia.*—One grain of morphia and one-third of a grain of atropia were given together in solution, by the mouth, to a moderate-

sized dog. In less than 1 minute, the pupils were moderately dilated (evidently due to the superadded influence of the morphia). In 1½ minutes, the dilatation is increased. In 5 minutes, as before; slight salivation. In 10 minutes, dilatation of pupils increasing; vomiting of glairy mucus. In 15 minutes, the dilatation is very great; retching; is evidently much nauseated. In 17 minutes, slight vomiting. In 20 minutes, shows a tendency to lie down; pupils greatly dilated. In 32 minutes, condition unchanged. In 36 minutes, the soporific effects of the morphia decided. In 42 minutes, eyes much injected; breathes rapidly; will no longer stand up, but lies quietly. In 52 minutes, can now stand erect; appears sleepy, but less nauseated. In 55 minutes, dilatation of pupils diminished.

In 1 hour, administered half a grain more of morphia, with one-sixth of a grain of atropia, hypodermically; no sensitiveness to the operation evinced. In 4 minutes, gets up, and runs when whipped; no special effects observed.

In 30 minutes, repeated the last dose. In 2 minutes, dilatation of pupils was noticed, which became extreme in 7 minutes; sensation much diminished; profound sleep. In 15 minutes, stupor decided, though he can be aroused by strongly pinching the tail. In 18 minutes, respiration tranquil—eighteen to twenty per minute. In 30 minutes, coma profound; cannot be aroused; eyes closed; pupils much dilated; eyeballs strongly drawn downwards. In 40 minutes, is somewhat sensible to a stream of water poured from a height upon his head. In 48 minutes, respiration perfectly tranquil—sixteen per minute; coma profound. In 1 hour from the last dose, or two hours and a half from the administration of the first dose, his condition was precisely the same—that of deep coma. In this state he was left to await the result. The next morning he had apparently quite recovered, exhibiting no signs of his yesterday's poisoning, except some dilatation of the pupils.

Remarks.—This animal took two grains of morphia and two-thirds of atropia, in three separate doses, all within an hour and a half; and although exhibiting very decided symptoms of the toxical influence of both these agents, it nevertheless completely recovered by the following morning. This recovery is not, however, to be wondered at, when we call to mind Expt. 9, where the animal took one grain and a half of atropia, and Expts. 10 and 11, in both of which recovery took place after very large doses; also Expt. 5, in which two grains of morphia were taken without a fatal result. The general symptoms exhibited in this case were clearly those of morphia, with the single exception of the continued dilatation of the pupils and the injection of the eyes. The *paralyzing* influence of atropia, already alluded to, seemed to be entirely absent. So far as the *antagonizing* influence of these two drugs upon each other is concerned, unless it be admitted that the morphia controlled the paralyzing influence of the atropia, this particular experiment would seem to afford us no light.

Expt. 13. *Morphia and Atropia.*—In this experiment a smaller dose of each poison was given, with a view of observing their relative effects. One grain of morphia in solution was injected, subcutaneously, into a small Scotch terrier, which in 3 or 4 minutes, caused some retching and slight vomiting. In 5 minutes, one-third of a grain of atropia was given hypodermically. In 9 minutes, the pupils much dilated; breathing very rapid and panting; lies on his side; refuses to stand up. In 17 minutes, dilatation of pupils extreme, with injection of the conjunctivæ. In 27 minutes, is perfectly comatose; respiration rapid and irregular; is sensible to strong pinching of the tail. In 36 minutes, respiration much slower. In 45 minutes, sensibility slowly returning; jumps up when a

stream of water is poured upon his head and neck; appears to start suddenly at intervals, though not amounting to spasms. In 1½ hour, he is more sensible to external impressions; is evidently better. In 1¾ hour, gets up when assisted, and attempts to walk, dragging his hind legs. In 2 hours, the improvement continues. He was left in this state, and on the following morning was found entirely recovered, with the exception that he does not stand up perfectly well, but tends to drag his hind legs.

Remarks.—In this experiment a small dog took one grain of morphia, and five minutes afterwards one-third of a grain of atropia. The combined effect of the two poisons is very obvious; and what is especially noticeable is the paralyzing influence of the comparatively small dose of atropia, as shown by the difficulty of maintaining the erect position, and by the tendency to drag the hind legs, which latter peculiarity was kept up until the following day. In none of these experiments on morphia and atropia have I observed anything like tetanic spasms; though in this last case I find that, as the animal's sensibility was gradually returning, or as the influence of the morphia began to subside, he seemed to start suddenly at intervals; but there were no distinct spasms.

Expt. 14. *Atropia and Morphia.*—Two grains of sulphate of morphia in solution were injected under the skin of a moderate-sized mongrel dog. No perceptible effect was produced up to 20 minutes, except a slight sleepiness. (The eyes could not be examined advantageously on account of the experiment being performed by artificial light.) In 30 minutes, the dose was repeated—making four grains of morphia in all. In 15 minutes, he is evidently soporose, but answers and arouses when called.

In 30 minutes, or 1 hour from taking the first dose, four grains of atropia dissolved in water with the aid of a few drops of acetic acid, were injected under the skin. He was very sensitive to this operation, much more so than to the injection of the morphia. The conjunctivæ were, at the time, much injected.

In 15 minutes, he lies perfectly quiet; respiration easy and natural. In 40 minutes, he is lying down in a partial stupor, but can be aroused somewhat. In about 1 hour from the administration of the atropia, he became paralyzed in hind legs, much more so than the animal operated on in Expt. 13. He continued in this state, lying perfectly quiet; could not stand erect, from weakness in his legs. He was left in this condition at 10½ o'clock P. M. The next morning—16 hours after taking the first dose, his power of locomotion had partially returned; he runs about as if afraid, whining constantly, and dragging his hind legs very decidedly; cannot stand perfectly erect; has vomited several times; refuses food, but drinks water. At the end of 24 hours he had completely recovered both his strength and appetite, retaining only some dilatation of the pupils.

Remarks.—This dog took four grains of sulphate of morphia, followed in one hour by four grains of atropia, both hypodermically. The narcotic effect of the morphia was sufficiently obvious, but yet not more decided than in Expt. 5, where only two grains were administered. The four grains of atropia which were subsequently given appear to have produced little, if any effect, until the expiration of a full hour, when a very decided paralytic impression was obvious, especially in the hind legs. This condition continued, though slowly diminishing, for nearly twenty-four hours. No disposition to spasms was ever noticed. Did the morphia have anything to do with this? It certainly did not appear to antagonize the

paralyzing influence of the atropia, since this effect was more conspicuous here than in Expt. 13, where no morphia had been taken. Whether it counteracted the *excitant* influence of the atropia is, I think, an open question. Neither this, nor any of my other experiments, has satisfactorily demonstrated the positive antagonism of these two poisons. On the contrary, if we were to form an opinion from the last experiment, the converse would seem rather to be proved, viz., that morphia rather intensifies, at least one portion of the atropia-impression—its paralytic effect.

But, as already intimated, we are as yet not fully authorized to draw inferences from experiments on animals in relation to the human subject. The interesting and important question then arises, how far do these two substances modify one another? Are they to be considered, in any sense, *antidotal* to each other? If we can gather no positive information by carefully conducted experiments on the lower animals, we must of necessity appeal to such results as observation and clinical experience may afford. I find a diversity of opinion on this subject existing among medical authorities; some professing the strongest confidence in the mutual antidotal powers of these alkaloids, whilst others entirely refuse their assent to the proposition. Doubtless, many cases may be cited *pro* and *con;* for this is just one of those conditions in which it is impossible *absolutely to prove* the effect alleged, since it might always be within the range of possibility for a recovery to take place, even without the administration of the supposed antidote. But, taking a fair honest view of all the cases which I have been able to collect together, as well as of those which have fallen under my own personal observation, I feel constrained to admit that the weight of evidence is in favour of such an antidotal, or antagonizing effect, in the human subject. I feel so strongly impressed with this belief, that I should consider myself very culpable if, when summoned to treat a case of poisoning, either by opium or belladonna, I should neglect to employ the alternate drug, with a view to its antidotal influence.

I will not, on the present occasion, occupy the time of the reader by mentioning the numerous cases, confirmatory of this opinion, that have been reported by various observers, as these are readily accessible to the profession.

I will next consider the subject of the antagonism of *strychnia* and various other poisons.

In relation to the effects of strychnia, these are now so clearly understood, and they have so frequently been verified by experiment, that it would seem scarcely necessary to allude to them here. Unlike any of the active poisons which we have been considering, strychnia produces its fatal effects chiefly, if not exclusively, through its operation upon the spinal cord, without influencing the brain. Hence, we find the subject of a fatal dose of strychnia retaining perfect consciousness and intelligence, while writhing under the most terrific spasms.

In accordance with the plan adopted in my former experiments, I will first give the results of the exhibition of a fatal dose of strychnia alone upon a dog.

Expt. 15. *Strychnia alone.*—Three-quarters of a grain of strychnia in solution was injected, hypodermically, into a moderate-sized dog. No perceptible effect until the lapse of 4 minutes, when trembling and rigidity of the legs were exhibited. In 4½ minutes, he fell over in a rigid spasm, which was prolonged for a minute and a half; no cry; pupils somewhat dilated. In 6 minutes, continuous jerkings. In 8 minutes, rigidity increased; bladder evacuated. In 9½ minutes, death. Immediately after death, there was perfect relaxation of all the muscles; pupils widely dilated.

Remarks.—The above are the usual, well-recognized effects of a poisonous dose of strychnia (half a grain to three-quarters) upon the dog. I have invariably noticed the complete relaxation of the body occurring immediately after death, although the most intense rigidity of the muscles was present just before, or in the very act of death. The extreme dilatation of the pupils after death has likewise been always observed.

Expt. 16. *Strychnia and Prussic Acid.*—One-third of a grain of strychnia and half a fluidrachm of the officinal prussic acid were given, by the mouth, to an ordinary sized dog. In half a minute, he fell over in convulsions, uttering the peculiar yelp; pupils moderately dilated. Within the minute, the spasms were repeated, especially in the fore legs, and lasting two minutes. In 3 minutes pupils dilated; lies quietly, but jerks his legs and becomes tetanized when touched; bowels evacuated; respiration over 50. In 3½ minutes, a violent tetanic spasm occurred, with much rigidity. In 5 to 10 minutes, a succession of violent contractions of the limbs. In 10 minutes, pupils contracting; spasms of the jaws. In 11 minutes, utters cries; spasms almost incessant. In 15 minutes, rigidity of jaws, with general violent convulsions. Thus far, the symptoms of strychnia-poison are the most apparent.

In 15 minutes from the commencement, half a fluidrachm of prussic acid was given, hypodermically. In half a minute, decided relaxation followed, attended with extreme dilatation of the pupil, and resulting in death, in less than one minute.

Remarks.—It is curious to observe the effects of combining these two violent poisons. So far from antagonizing each other, they appear rather to intensify each other's powers. Although the dose of strychnia was comparatively small—one-third of a grain, and the first dose of prussic acid was a moderate one—half a fluidrachm, yet there was exhibited an almost immediate impression of the latter poison, which, however, speedily passed into well-marked symptoms of strychnia-poison, since, in three and a half minutes, the peculiar tetanic spasms occurred. The second dose of prussic acid, given fifteen minutes after the first, seems to have immediately overcome the rigid spasms, though only to hasten the death of the animal, which occurred within one minute after it was injected beneath the skin.

Expt. 17. *Strychnia and Prussic Acid.*—Gave one fluidrachm of prussic acid and three-quarters of a grain of strychnia, by the mouth, to a medium-sized terrier bitch. In half a minute, the respiration was violent and panting; lies down; pupils natural. In 1¼ minute, strong spasm; no cry; respiration very laboured; pupils strongly dilated. In 3 minutes, another convulsion; forelegs in violent motion. In 4 minutes, a rigid, tetanic spasm, followed by another in

half a minute. In 6 minutes, severe tetanic spasm; respiration laboured. (There seem to be almost continuous convulsions, interrupted by tetanic spasms.) In 9½ minutes, a prolonged tetanic spasm; bladder evacuated; pupils somewhat dilated. In 12 minutes, convulsions alternating with tetanic spasms. In 15 minutes, respiration very laboured. In 17 minutes, a severe tetanic spasm. In 18 minutes, death.

Remarks.—In this experiment, double the quantity of prussic acid, and rather more than double of strychnia, compared with Expt. 16, were administered; and, as in the latter case, the immediate impressions were clearly those of prussic acid. Four minutes elapsed before a decided tetanic spasm marked the influence of the strychnia. From this time until the death of the animal, which occurred fourteen minutes later, there appeared to be a succession of the ordinary convulsions produced by the one poison, alternating with the tetanic spasms caused by the other. Certainly, there was no true *antagonism* between them.

Expt. 18. *Strychnia and Morphia.*—One grain of sulphate of morphia in solution was administered, hypodermically, to an average-sized dog. In 7 minutes, he appears very drowsy; will not stand; pupils somewhat dilated; respiration natural; very fully narcotized. In 10 minutes, gave half a grain of strychnia hypodermically. In 5 minutes, seems uneasy; starts when touched. In 6 minutes, falls over in a decided tetanic spasm, which continues for some time. In 21 minutes, death took place gradually and imperceptibly.

Remarks.—The influence of morphia, which was very decided in this case, did not appear at all to interfere with the usual powerful influence of the strychnia, which was not given until the full narcotic impression of the former was manifested. These poisons cannot, therefore, so far as this experiment goes, be regarded as antagonistic.

Some years ago, when experimenting with strychnia and morphia in combination, for a different object, I administered to two cats a mixture of these two substances—to one a quarter of a grain of each, and to the other the twentieth of a grain of strychnia and the tenth of a grain of sulphate of morphia—expecting to find the powerful effects of the former poison modified somewhat by the latter. On the contrary, however, these effects appeared to be rather intensified, the peculiar convulsions coming on sooner, and seeming to be quite as violent, as when an equal dose of strychnia had been administered alone.

Expt. 19. *Strychnia and Tobacco.*—To a moderate-sized, common dog, after fasting for nearly two days, I administered by the mouth three-quarters of a grain of strychnia, and two fluidrachms of a concentrated infusion of tobacco, in combination. No perceptible effects were noticed up to 25 minutes, except evident disgust at the taste of the dose. Now, slight agitation was observed. In 26 minutes, there was a violent tetanic spasm, lasting 4 minutes; no cry; pupils much dilated, spasm is more prolonged than usual; respiration panting. In 31 minutes, convulsions (not tetanic). In 33 minutes, spasms somewhat tetanic; pupils natural.

In 39 minutes, gave half a fluidrachm of the infusion of tobacco, hypodermically, which was immediately followed by tetanic spasms, terminating in death; the bladder and rectum were evacuated at the same time; pupils dilated.

Remarks.—Here the only perceptible effects of the tobacco, in modifying the influence of the strychnia, were, possibly, to protract the time of its manifestation—twenty-six minutes having elapsed before the characteristic spasms came on. These spasms continued with slight intermissions until the death of the animal, in thirty-nine minutes, and immediately after giving an additional dose of tobacco.

Expt. 20. *Strychnia and Tobacco.*—A middling-sized Scotch terrier was made to swallow two fluidrachms of a concentrated infusion of tobacco. In 1 minute, he appears to be nauseated. In 5 minutes, retching and free vomiting. In 20 minutes, appears quite well. In 30 minutes, gave three-quarters of a grain of strychnia and three fluidrachms of the tobacco infusion together, by the mouth. In 3 minutes, a slight trembling; no evidence of nausea. In 5 minutes, decided trembling, with uneasy movements of the body; pupils natural. In 11 minutes, trembling excessive; respiration panting. In 13 minutes, fell over in a violent tetanic spasm, lasting 1 minute; pupils moderately dilated. The respiration became much slower; death in 15 minutes.

Remarks.—In this case, although the system was, so to speak, saturated with tobacco, this agent does not seem to have offered the slightest impediment to the powerful toxic impression of the strychnia.

Expt. 21. *Strychnia and Tobacco.*—Two fluidrachms of the strong infusion of tobacco were administered by the mouth to a Scotch terrier dog, of average size. In 1 minute, he exhibited uneasiness and panting respiration. In 5 minutes, retching and vomiting; after which he appears easy; pupils natural. In 10 minutes, increased vomiting of bilious matter.

In 15 minutes, the dose of tobacco was repeated, which did not seem to excite nausea so soon as before. In 5 minutes, he appears ready to fall over, as if sleepy; pupils natural; no trembling. In 8 minutes, violent retching and vomiting. In 10 minutes, trembles while standing, as if ready to fall; respiration panting.

In 16 minutes, repeated the dose of tobacco (two fluidrachms), together with half a grain of strychnia. In 3 minutes, lies down quietly. In 5 minutes, a slight quivering of the hind legs; respiration somewhat panting; no nausea or vomiting. In 6 minutes, tremblings increased; respiration more rapid. No further change was noticed up to 38 minutes after the exhibition of the last dose, when the animal is able to run about, though with a tremulous motion.

Now, repeated the combined dose of strychnia and tobacco, which was immediately followed by a rapid and noisy respiration. In 4 minutes, slight vomiting. In 5 minutes, great trembling. In 6 minutes, is unable to stand. In 7 minutes, a partial spasm on being pushed; respiration very rapid and noisy; leans against the wall. In 9 minutes, falls over in a convulsion. In 10 minutes, respiration is slower and quiet; spasm is easily excited by a touch; pupils dilated. In 12 minutes, there is a return of the noisy and rapid respiration; also a continuance of the convulsions of a modified nature, only partially tetanic. In 15 minutes, condition the same; groans occasionally; is extremely sensitive to the touch. In 20 minutes, death took place, without a convulsion, while in the act of giving another dose of the tobacco.

Remarks.—This dog took, in all, one grain of strychnia and one fluidounce of the strong infusion of tobacco, within an hour and ten minutes. It will be observed that the quantity of both the poisons used was considerably greater than in the two former experiments. There is here, apparently, a more decided influence of the tobacco manifested, in controlling the effects of the strychnia; but it is evident that the latter poison can

hardly be considered as having been *antagonized* by the tobacco, since the final fatal symptoms were unquestionably those of strychnia.

Expt. 22. *Strychnia and Tobacco.*—Half a fluidrachm of the strong infusion of tobacco was injected subcutaneously into a mongrel terrier pup. No perceptible effect was observed in 5 minutes, when the injection was repeated. In 1 minute, there were retching and vomiting of tenacious mucus, which continued for several minutes; appears to be very sick. In 9 minutes, when the dog seemed to be thoroughly under the tobacco influence, one-third of a grain of strychnia was injected hypodermically. In 2½ minutes, trembling of the hind legs. In 3 minutes, falls over in a tetanic spasm; no cry. In 4 minutes, bladder evacuated; pupils moderately dilated. In 5 minutes, death.

Remarks.—In this case there did not appear to be the slightest antagonizing influence exerted by the tobacco, although the full constitutional effects upon the animal were very marked. The characteristic tetanic impression of the not very large dose of strychnia—one-third of a grain—manifested itself in full force, in the short space of three minutes.

As the results derivable from the four experiments last recorded, I think we must conclude that, in the dog at least, strychnia and tobacco cannot be regarded as true antagonistic poisons, nor, consequently, as mutually antidotal in their operation. So far as relates to the human subject, we have the testimony of some authorities that tobacco does really appear to antagonize the toxic influence of strychnia. Prof. Haughton, of Oxford, England, reasoning upon physiological principles, was, I believe, the first to employ tobacco with this view. Others, both in this country and abroad, have reported similar cases, in which the alleged antidote was used with apparent success; but none of them can, I think, be regarded as unequivocal demonstrations, since in every instance previous vomiting had been produced, which of course might have rid the stomach of the poison.

For the purpose of testing the antidotal properties of tobacco, Prof. Wormley, of Ohio, made thirteen experiments upon cats, administering to each animal half a grain of strychnia, along with an infusion of twenty grains of tobacco, and in some cases repeating the latter substance. As the result of these experiments, all the animals, with a single exception, died, and in most instances within the usual period. In some cases the strychnia symptoms did not seem to be at all affected by the tobacco; while in others they were of a compound nature, precisely as I have just described in my own experiments on dogs. In the exceptional case above mentioned, the animal that had taken the mixed poisons, after vomiting, and exhibiting some stiffness of gait, appeared to have completely recovered in the course of an hour. Now, in these, as well as in all other experiments made with the view of determining the effects of so-called antidotes, we should never lose sight of the threefold fact that—*first*, there is a remarkable difference in the susceptibility to the influence of strychnia; *secondly*, that there is also a great difference in the time at which the peculiar symptoms are manifested after the administration of the poison; and *thirdly*, that recoveries not unfrequently occur after very large doses

have been taken, and that too, apparently, without the intervention of remedies.

Expt. 23. *Strychnia and Tinct. Chloride of Iron.*—Half a grain of strychnia, in solution, was administered by the mouth to an average-sized dog. No apparent effect until 6 minutes, when there was trembling of the hind legs, which in two minutes after became a slight spasm. In 10 minutes, fell over in a decided tetanic convulsion. Now, gave by the mouth one fluidrachm of tinct. ferri chlor. diluted with water. In 10 minutes, there was a slight convulsion; pupils somewhat dilated. In 15 minutes, continuous spasms; respiration nearly suspended; no cry; no evacuation of bladder or rectum. In 20 minutes, death, without convulsion. Perfect relaxation after death.

Remarks.—I had been informed by a medical friend that he had witnessed an experiment similar to the above, in which the poisonous influence of strychnia was apparently neutralized completely by the use of the muriated tincture of iron. In the present case it seemed slightly to modify the effects of the former poison, without, however, preventing its fatal result.

Expt. 24. *Strychnia and Tinct. Chloride of Iron.*—Half a grain of strychnia was given by the mouth to a small terrier bitch, followed in 3 minutes by a little less than a fluidrachm of tinct. ferri chlor., given also by the mouth.

No apparent effects until 9 minutes, when there was slight trembling of the hind legs, which in another minute became a spasm. In 11 minutes, fell over in a violent tetanic spasm. In 13 minutes, this spasm returned; pupils dilated. In 14 minutes, gave another fluidrachm of the iron solution, by the mouth; this was immediately followed by a prolonged convulsion, and succeeded by complete relaxation. In 2 minutes, there was a repetition of the convulsion and relaxation, with evacuation of bladder. In 5 minutes, another severe tetanic spasm, with snapping of the jaws. In 6 minutes, death took place, quietly, followed by perfect relaxation.

Remarks.—There was no evidence, in this experiment, to show that the tincture of chloride of iron has any proper antidotal power over strychnia.

Expt. 25. *Strychnia and Tincture of Iodine.*—From the circumstance that, if the tincture of iodine be mixed with strychnia in solution, a precipitate will be formed, it has been conjectured that iodine, in the form of tincture, would prove antidotal to strychnia. With a view of testing this fact, I made the following experiment: Half a grain of strychnia in solution was given by the mouth to a half-grown dog; and in 2 minutes after, 15 minims of tincture of iodine, in two fluidrachms of water. In 1 minute, some staggering of gait. In 5 minutes, a slight convulsion. In 10 minutes, fell over in a tetanic spasm; evacuation of bladder; foams at the mouth; pupils dilated; spasms continuous. In 13 minutes, perfect relaxation, but convulsive movements of the mouth; loss of sensation. In 14 minutes, twitching about the eyes and mouth. In 20 minutes, death, gradually and imperceptibly.

Remarks.—This single experiment does not exhibit any good evidence of an antagonism between strychnia and tincture of iodine.

I made a single experiment, to test the antagonism between *strychnia and aconitia*—giving half a grain of the former, with a quarter of a grain of the latter, in combination. The symptoms that followed were purely those of strychnia-poisoning—death occurring in thirteen minutes.

In a future paper, I hope to communicate the results of some experiments on the antagonism of Strychnia and Calabar-bean, Bromide of Potassium, Chloral and Chloroform, and likewise on the antagonism of Calabar-bean and Atropia.

ART. XIV.—*Statistical Report of 494 Cases of Diseases of the Ear.* By D. B. ST. JOHN ROOSA, M.D., Clinical Professor of the Diseases of the Eye and Ear in the University of New York, Surgeon to the Manhattan and Brooklyn Eye and Ear Hospitals, &c. (Read before the New York State Medical Society.)

SOME months since I presented to the profession, at a meeting of the New York Academy of Medicine, and in the *New York Medical Journal*,[1] the statistics of five hundred cases of aural disease observed in private practice. Since that time I have had the opportunity of observing and treating about the same number, under the same circumstances, besides a much larger number at the Brooklyn and the Manhattan Eye and Ear Hospitals.

In view of the scepticism existing even in the highest ranks of the profession, as to the necessity of treating diseases of the ear, I believe I can do no better service to the cause of truth than that rendered by the presentation of such unadorned facts as are contained in a careful, although necessarily superficial, report of a number of affections of the organ of hearing, as they were seen in private practice in a period of twenty-eight consecutive months.

As evidence of the sceptical state of the profession in regard to aural therapeutics, I may adduce the Boylston prize question for 1870—"Criticisms on the recent opinion of a medical writer that the less serious diseases of the ear may be successfully treated by a well-qualified general practitioner, and the more serious affections by none"—and the fact that distinguished practitioners have, even within a few months, seriously advised patients to stop a course of treatment for suppuration in the ears, on the general ground that it was not best to "meddle with the ear," and this without any examination of the cases, and with an expressed confidence in the practitioner who had charge of them.

The cases herewith presented were taken from my note-book without selection, as they occurred. Those only are classified as "cured," in which the hearing was restored to a normal condition, as tested by the watch, the tuning-fork, and ordinary conversation; and when the membrana tympani, if previously ulcerated, has been healed. Judged by the ordinary use of the term *cured*, this standard is too high. It is higher, for example, than that in ophthalmic practice, where the removal of a cataractous lens—so that the patient gets sight enough to read coarse print—is called a cure of the cataract, although the vision obtained may be only two-thirds of that enjoyed by a person who has never had cataract. In the same manner we speak of *curing* a bone affected with necrosis, by removing the diseased portion, even if considerable deformity be left. If a patient who has

[1] Vol. ix., No. 5.

suffered for years from an ulcerative process in the cavity of the tympanum, recovers to such an extent that the ulcer is healed, and the hearing power improved, he would be said to be cured, under a standard no higher than that usually adopted in medical statistics; but I have preferred in this table, and in the one previously presented, to put them under the head of "much improved."

A large proportion of the 494 cases are classified as "unknown." This term means that these were either cases of persons coming from a distance, who were unable to return after the consultation, or cases which I saw in consultation with other practitioners, from whom I have never heard the result of the treatment agreed upon. Some of these, at least, were undoubtedly cured or improved, or I should have heard from them again.

Those cases classified as "unimproved" embrace not only such as were not benefited after some treatment more or less thorough, but also such as were pronounced entirely unworthy of treatment—as being hopeless; for instance, cases as incurable as complete leucoma of the cornea, or advanced atrophy of the optic nerve.

There were fourteen cases of furuncular or circumscribed inflammation of the external auditory canal; eight were cured, two were much improved when last seen, and four were seen but once.

The treatment consisted of a free incision, the use of warm water through Clarke's ear-douche, and the administration of iron and quinia when there was some general debility, as there often was.

Of diffuse suppurative inflammation of the external auditory canal, the so-called "otorrhœa externa," there were only six cases. Three of these were cured; two were much improved; while the result in one case is unknown to me. I am inclined to think that it is a fact not generally appreciated, that in the most cases of chronic suppuration in the ear, the primary seat of the disease is the cavity of the tympanum, and not the external auditory canal. One of the three cases that were cured was that of a young lady, who had suffered from a "discharge from the ear" for some two years. Her hearing was so much impaired that she could not hear ordinary conversation; there was an offensive and profuse discharge from the auditory canals and outer surface of the membrana tympani, and her general condition was much affected in consequence of the depression of spirits induced by her disease. She had been frequently, and in some instances persistently, prescribed for, but she never had been *treated;* that is to say, her physicians had been content with advising the use of a syringe, and astringents, alteratives, and counter-irritants, while they had never given their personal attention to the cleansing of the ears, and the application of the appropriate agents to the diseased integument of the external auditory canal and outer surface of the membrana tympani.

Now I hold that it is just as impossible for a patient to cleanse his own

ear, if there be much suppurative inflammation affecting it, as to cauterize his own palpebral conjunctiva, and I feel persuaded that many of the failures to check and cure an ulceration of the ear result from the want of the personal care of the attendant, who has prescribed the proper means of treatment, but who has been content with ordering, what he should have done.

The treatment employed in these cases was simply the daily cleansing of the parts by means of a syringe and warm water, cotton on an appropriate holder, a camel's-hair brush, or the like, with the subsequent application of weak astringents in weak solutions, such as the sulphate of zinc, or the nitrate of silver, in a solution of the strength of forty grains to the ounce. This latter application was made with a cotton-holder, but it was not poured in the ear, as were the weaker solutions of zinc and alum. During the cleansing process the ear was frequently examined by means of Troltsch's method, the use of the concave mirror, and ordinary daylight.

There were three cases of eczema of the auricle and auditory canal, all of which were cured by a method of treatment similar to that just detailed.

There were four cases in which the microscope showed that the vegetable fungus, known as aspergillus, was growing in the external auditory canal and on the surface of the membrana tympani.

Since the publication of Schwartz's[1] case, and Wreden's brochure, containing a number of cases, it has been found that many obstinate cases of what were formerly supposed to be instances of diffuse inflammation of the external auditory canal, or of impacted cerumen, were really caused by the growth of this fungus. It may be considered as a kind of mould that forms on damp walls, and in other moist places, and which may enter the ear, especially if the ground be prepared for it by a precedent inflammation, that has abraded the integument.

The pain, vertigo, and tinnitus aurium, produced by the growth of this fungus, are very considerable; but these symptoms are the same with those in several other affections of the ear. The microscope is, therefore, the only means of positively determining the exact nature of the affection, although the objective appearances to the naked eye will assist very much in the diagnosis. In a communication which appeared in the *American Journal of the Medical Sciences* (January, 1870), by Dr. Wm. B. Lewis and myself, a full account of two of the cases embraced in this table is published, with drawings by Dr. Lewis of microscopical appearances.

The treatment of this affection is very simple; but it is apt to be tedious. The fungus should be thoroughly removed by the forceps as fast as it is produced, used under a good illumination; after this the part should be

[1] Archiv für Ohrenheilkunde, Bd. 2, p. 5.

kept clean by the frequent use of the syringe and warm water, which latter agent I have found quite as useful as to the so-called parasiticides.

There were thirty cases of inspissated cerumen, all of which were cured by the removal of the hardened secretion, by means of the syringe and warm water. Impacted wax often occurs, as we all know, in connection with chronic inflammation of the mucous membrane lining the cavity of the tympanum, if not in consequence of it; but in such cases it is merely a symptom, and not a disease. When hardened wax is removed from such ears, the patients experience scarcely any benefit. The same negative effect is produced by the removal of hardened wax from the remains of an ulcerated membrana tympani. I have, therefore, omitted these cases in the classification, and have classed together the true, uncomplicated cases.

One of these cases was somewhat remarkable, from the fact that the hardened secretion had remained in the ear, and very much impaired the hearing for six years.

There was one case in which I was called to remove a foreign body from the auditory canal, which was not to be found. The mother stated positively that the child had placed a carob bean (Johannis rod) in the ear, and the physician who asked my aid assured me that he could see it and feel it, and that he had made several attempts to remove it, one while the child was under the influence of chloroform, but without success. The child was so much frightened by the previous attempts at the removal of the supposed foreign body, that I was unable to make a thorough examination until the child was anæsthetized, when I satisfied my colleague and myself that there was no foreign body in the ear, and that what had been supposed to be so was a projection of the bony auditory canal. The patient, being let alone, did well, and the ulceration in the membrana tympani, caused by the manipulations, was completely checked.

There were two cases in which bodies in the external auditory canal were promptly removed by the use of the syringe and warm water.

There were twelve cases of acute catarrh of the middle ear, affecting one side, attended by the usual symptoms, redness of the membrana tympani, pharyngitis, impairment of hearing, severe pain, tinnitus, and a sense of fulness in the ear. The treatment consisted in the use of leeches, warm water in the auditory canal, gargles, diaphoretics, and opium. In two cases paracentesis of the membrana tympani was performed, with marked and instantaneous benefit.

Eleven cases were cured, and one died from the extension of the affection to the meninges of the brain, probably through the mastoid process. This case has already been reported.[1] The membrana tympani did not suppurate, but the affection localized itself in the mastoid portion of the

[1] Medical Record, Dec. 1, 1870. Transactions of the American Otological Society, third year.

middle ear. Trephining of this process was resorted to, but the patient died in a comatose condition.

There were thirteen cases of acute catarrh of the middle ear, occurring on both sides. Ten of these were cured, while the result of the treatment advised in the three remaining cases is unknown to me.

Two of these inflammations were caused by the use of the so-called Thudichum's nasal douche, for the relief of naso-pharyngeal catarrh. I do not now prescribe the use of this instrument, unless with the greatest circumspection, and after having fully explained the danger connected with its use. The danger is probably from the entrance of fluid through the Eustachian tubes into the cavity of the tympanum and mastoid cells. One such accident will not usually produce more than momentary uneasiness, but a repetition of the accident, even if the water be warm, is not without danger. I have observed two cases where the appliance, used under my own direction, has induced suppuration of the drum membrane. I have also seen several other cases, some of which were reported by Dr. C. I. Pardee in the *Medical Record*, in which acute inflammation of the middle ear was caused by the use of the douche. In one case, elsewhere reported in full,[1] pyæmia resulted from the aural suppuration, and the patient nearly lost his life. I now rely upon the posterior nares syringe, a nebulizer, and gargles, for the purpose of cleansing and medicating the posterior nares.

In all these cases of inflammation of the middle ear, the Eustachian catheter, and Politzer's method of inflating the membrana tympani, were employed as soon as the very acute symptoms had been subdued. Without these methods of restoring the communication between the pharynx and the middle ear, the hearing power of the patients would, I think, have remained permanently impaired. They would, probably, have passed over into that class of cases already so disproportionately large, placed under the head of "chronic aural catarrh."

Of the whole number of cases in this table, 269, or a little more than fifty per cent., were diagnosticated as chronic inflammation of the mucous membrane lining the middle ear. This general heading includes all varieties of this affection. Some of them were cases where the inflammation was chiefly seated in the Eustachian tube, the "tubal catarrh" of many writers, as well as those hopeless ones in which the abnormal appearances on the membrana tympani, and in the pharynx, were so little pronounced, that, under our old ideas, they would have been classified as cases of "nervous deafness," but cases in which the tuning-fork enables us to exclude the labyrinth from being the primary seat of the disease. In fact, the classification is much too general, but it is as complete as the notes taken amidst the demands of practice will allow. The results of the treatment are not flattering. They read like those of phthisis pulmonalis. Their publication will do good, however, if they serve to convince

[1] Archives of Ophthalmology and Otology, No. I.

us that inflammations of the middle ear must be treated in their incipiency, if we desire good results.

The fact that the statistics are not as favourable as those of Schwartze, of Halle, in Germany, who is in the habit of publishing statistical tables such as mine, I cannot fully explain. A German practitioner in New York, who has seen much of aural disease, both in Germany and America, informs me that he considers chronic aural catarrh more intractable with us than in his native country.

Nearly all of these 269 cases had been affected for years, and most of them had never been treated in any efficient local manner. The causes of many of them may be found in the neglected "earaches" of childhood, or in the coryzas of more mature years, while a few seemed to have no apparent cause, and having once begun, advanced insidiously, but steadily, to pathological changes which rendered all hopes of recovering the hearing futile.

The number of these cases will undoubtedly be lessened in the next generation, now that a suppurating membrana tympani, and one of the greatest tortures that can be experienced—a pain in the ear—are being thought worthy of prompt attention.

The results of these cases were that 12 were cured, 32 were much improved, 55 were improved, 75 were unimproved, and 95 were seen but once.

The treatment employed was chiefly local, and consisted in the use of gargles, of the Eustachian catheter, through which air, vapour of water and of iodine, solutions of sulphate of zinc and alum, were passed. Politzer's method with the bulb attachment, in which various vapours were generated, *e. g.* chloroform and tincture of iodine, as well as applications to the mouths of the Eustachian tubes and posterior pharyngeal space, were also employed. The general condition was always carefully considered, and attempts were made, when necessary, to bring the patient into the most favourable sanitary conditions.

There were 17 cases of acute suppuration in the middle ear; 15 affected one ear only; 8 of these were cured; 5 were improved; and in 4 cases the result is unknown to me. In one instance there was periostitis of the mastoid, and several free incisions down to the bone (Wilde) were required, to prevent the advance of the inflammation to the meninges of the brain.

There were 93 cases of chronic suppuration in the middle ear. The most of these were of years' standing, and the result of naso-pharyngeal inflammation occurring during scarlet fever or measles. My experience leads me to the belief that physicians would prevent the occurrence of many of these cases, by devoting a little of the time urgently demanded by the general symptoms, to the condition of the ear. If means were promptly taken to quiet an "earache" by the instillation of warm water or the application of leeches, and if an ulcerative process were at once checked by thorough cleansing of the auditory canal and cavity of the tympanum, with the subsequent use of a weak astringent solution, many

of the deplorable consequences classed under the head of "otorrhœa" could be prevented.

Six of these cases of chronic ulceration were cured; 27 were much improved (perhaps some of the subjects considered themselves cured, since the ulceration was stopped, and the hearing much improved). In 26 cases there was improvement, 7 were unimproved, and 27 were seen but once.

Polypi were removed in some of the cases, either by Wilde's snare or Hinton's forceps.

Thirteen were cases of primary disease of the labyrinth, as shown by the tuning-fork. Among the 8 patients affected with chronic aural catarrh, there were some in whom the labyrinth was involved, but secondarily; 10 were considered as hopeless cases, and were not treated. In 3 some encouragement was given, but the patients were not treated.

There were 14 deaf-mutes, chiefly from affection of the middle ear occurring at so early a period that speech could not be acquired by imitation.

There were 3 cases of sounds in the ear, without impairment of structure or function, as far as could be determined. One was an objective sound, being heard by myself as well as the patient as a crackling noise, seeming to come from the mouth of the Eustachian tube, and to be due to abnormal muscular action. I am sorry to say that I saw this case but once, and then for a very short time.

494 *Cases of Diseases of the Ear seen in private practice.*

	Cured.	Much improved.	Improved.	Unimproved.	Unknown.	Died.	Total.
EXTERNAL EAR.							
Furuncular inflammat'n; external auditory canal	8	2	..	..	4	..	14
Diffuse inflammation	3	2	..	1	..	..	6
Eczema	3	..	..	..	..	..	3
Aspergillus	3	1	..	..	..	..	4
Inspissated cerumen	30	..	..	..	..	..	30
Supposed foreign body	1	..	..	..	..	..	1
Foreign body	2	..	..	..	..	..	2
MIDDLE EAR.							
Acute catarrh—							
One side	11	..	..	..	..	1	12
Both sides	10	..	..	..	3	..	13
Chronic catarrh—							
One side	2	3	5	2	3	..	15
Both sides	10	29	50	73	92	..	254
Acute suppuration—							
One side	7	..	3	..	5	..	15
Both sides	1	1	..	..	..	..	2
Chronic suppuration—							
One side	4	12	13	..	11	..	40
Both sides	2	15	13	7	16	..	53
INTERNAL EAR.							
Primary disease labyrinth—							
One side	..	..	..	7	2	..	9
Both sides	..	..	..	3	1	..	4
Deaf-mutes	..	..	..	14	..	..	14
Tinnitus aurium; cause unknown	..	..	..	3	..	..	3
	97	65	84	110	137	1	494

ART. XV.—*Stricture of the Œsophagus from Swallowing Lye.* By SAMUEL ASHHURST, M. D., Surgeon to the Episcopal Hospital of Philadelphia.

CLARA S., æt. 4½, was admitted into the Episcopal Hospital, November 12, 1870, with the symptoms of stricture of the œsophagus.

Two years previously she swallowed some caustic lye, which blistered the cavity of the mouth. For two weeks she was obliged to subsist upon liquids, after which time she was able to eat semi-solid nourishment, but any hard food was immediately regurgitated. Six months after the accident there was complete closure of the œsophagus, which lasted for two days, during which time everything was returned. This condition suddenly passed off after she had ejected from the mouth what the mother described as a small piece of lead, and she was again able to swallow soft food with comparative comfort. Four months later, or ten months from the original mishap, symptoms of closure of the gullet were again induced, apparently from swallowing a small piece of meat, which continued for four days, and the patient became much exhausted, but rapidly recovered upon the sudden subsidence of the acute symptoms.

On the evening of November 9, 1870, she ate a piece of ham, and immediately after was unable to swallow anything. When admitted to the Episcopal Hospital three days later, the resident physician was unable to pass the stricture with any instrument. The attempt did not seem to cause much annoyance; her bowels were opened naturally shortly after she came into the house; the pulse was one hundred and thirty; she seemed vigorous and well nourished. I first saw the case November 13th, and made four attempts to pass the constriction with various instruments, but without avail. Water returned immediately, milk not so soon, and semi-solids after a slightly longer interval; a portion as large as a small pea could be retained in the œsophagus. There seemed to be some narrowing of the tube where the pharynx joins the œsophagus, but the probang was arrested at about an inch above the level of the diaphragm. She complained much of thirst, the countenance was placid, pulse one hundred and thirty-two. Enemata of beef-essence with milk, and a small quantity of whiskey, were ordered every hour; extract of belladonna was applied to the spine; and sufficient morphia to quiet restlessness given at night.

Nov. 14. Pulse 112; tongue coated. Attempts were again made with and without ether to pass the stricture, but without success. Upon consultation with my colleagues, it was decided not to recommend any operation. Eggs were ordered to be added to the enemata, and the whiskey omitted. She appeared stronger than on the previous day.

15*th*. Apparently failing; pulse 136; drowsy; complexion dusky; eyes tearful; emaciating rapidly; complains of hunger. Whiskey was again added to the injections, no further attempts were made upon the stricture.

16*th*, 11.30 A.M. Pulse 142 to 150; temperature in axilla 102½; rectum becoming intolerant; she can only retain egg and milk enemata, which were ordered to be regularly given, as well as a few drops of beef-essence by the mouth. There was a very offensive odour perceptible. At 2 P.M., after throwing up some offensive green matter, the stricture relaxed, as the child said the "lump had gone down," and she was able to retain small quantities of liquid. She took with avidity half-drachm doses

of beef-essence, alternately with an equal amount of egg and brandy, and the enemata were ordered to be continued. Altogether, she took about five ounces of concentrated nourishment by the mouth, but continued to sink, and died at 11 P. M.

Autopsy twelve hours after death.—Body much emaciated. On opening the abdomen, fluid could be pressed from the stomach into the mouth. Stomach and intestines somewhat attenuated; mucous coat of the stomach much softened. At the upper end of the œsophagus were several cicatrices. One and three-quarters of an inch from the lower end, surrounding the gullet, was a firm fibrous band, three-eighths of an inch wide, superficially, ulcerated on its internal surface. Upon splitting the œsophagus, the following measurements of its circumference were made: above the stricture $1\frac{1}{4}$ in., below the stricture $1\frac{1}{8}$ in., at seat of stricture $\frac{3}{8}$ of an inch. Nothing abnormal was observed in the other organs of the abdomen and chest; the head was not opened. No hard substance could be found in the stomach or intestines. For the notes of the case I am in large measure indebted to my then resident, Dr. J. R. F. Bell.

Remarks.—The operation of gastrotomy was twice discussed in consultation, and not recommended. The first time there appeared to be no ground for haste, and we preferred waiting to see if the stricture would become passable; on the second occasion, the child was too prostrate to attempt any operation.

Mr. Jonathan Hutchinson, in the fourth volume of the *London Hospital Reports*, relates a case of stricture of the œsophagus from swallowing alkali in an adult where, after gastrotomy was resolved upon, the stricture relaxed and the patient recovered without an operation. The cases resemble each other, except in the one important particular, that his recovered and mine died. He asks the advocates of opening the stomach to produce one case with results after the operation as good as those he has recorded; can he point to one where the results, after an operation, have been more disastrous than in mine, treated as it was upon the expectant method?

The case Mr. Hutchinson records, with the previous history of my patient, had much to do with deciding me against an operation; as the stricture, upon two occasions, had relaxed after complete closure, and the child had done well, I felt inclined to rely again upon the powers of nature.

So far as I know, this is the fourth case of cicatricial stricture of the œsophagus in which the question of gastrotomy has been considered. In one, where gastrotomy was done by Mr. J. Cooper Forster, the patient—a child four years old—died on the fourth day after the operation, apparently from rupture of the adhesions between the stomach and the abdominal wall. (*Guy's Hosp. Reps.*, 3d series, vol. v.) The second is that of Mr. Hutchinson referred to above, in which the operation was not done, and the patient recovered. The third is the case well known to the readers of this Journal, reported by Dr. F. F. Maury in its issue for April, 1870,

where the operation was done for a syphilitic stricture, the patient dying in fourteen hours. The fourth is the case now reported, in which the operation was not done, and the patient died. It must not be forgotten that the history of the second case is not completed, for though Mr. Durham, in the 2d edition of *Holmes's System of Surgery*, tells us that the patient was doing well two years from the termination of treatment, after one or two complete stoppages and relaxations, it may yet terminate as did mine.

While I agree with Mr. Hutchinson in most of his conclusions, I feel that the question is yet an open one, which can only be decided by future experience. Single cases are double-edged, cutting both ways. It is very difficult to resort to so desperate a measure as that of opening the stomach early in the case, with the knowledge that relaxation may and does occur; and when persistence of the symptoms makes us willing for the trial, the time is past, and there is no hope.

In reviewing the case we have recorded, we cannot feel that an operation should have been done, nor does the experience its course has afforded give us much encouragement for the future. Attempts to extract a piece of meat, as the probable offending body, were out of the question, as no such body could be recognized. Forcible attempts to pass an œsophageal stricture are utterly unwarrantable, as the probang or bougie is quite as likely to lacerate the walls of the œsophagus as to dilate the stricture.

The preparation is now in the Pathological Museum of the Episcopal Hospital in this city.

1423 WALNUT ST., January 16, 1871.

ART. XVI.—*The Uterine Dilator.* By WASHINGTON L. ATLEE, M. D., of Philadelphia. (With a wood-cut.)

THE idea of constructing an instrument of the kind here represented occurred to me in consequence of the great difficulty of permanently curing contraction of the os tincæ, and of the cervical canal of the uterus. I had frequently resorted to bougies and sponge-tents for that purpose. The former I found to be almost useless, and the latter, although more efficient, afforded only temporary relief, as, after having accomplished the necessary amount of dilatation for the time, soon after its removal the canal would again contract to its original condition, and the symptoms, for which the dilatation had been effected, would reappear. To guard against these repeated disappointments, I had a uterine bistouri caché constructed for me many years ago by John Rohrer, a surgical instrument maker of this city, with which I incised the cervical canal and os tincæ,

and afterwards kept them patulous, to a certain extent, by means of the bougie. This was more satisfactory in its results. This bistoury, constructed before I knew of a similiar one by Professor Simpson, of Edinburgh, is represented in the *Transactions of the American Medical Association.*[1]

Another condition of the uterus, however, not unfrequently occurred in my practice, which more especially originated the idea of the dilator. In treating granular inflammation of the os and cervix uteri, I was frequently annoyed by the fact that as the inflammation subsided and the patient was about to be discharged, the lips of the os tincæ would become agglutinated, a commissure form between them, or an entire closure of the os take place. These adhesions, when very recent, can readily be broken up by the small sound; but if the patient absents herself too long, have to be severed by the bistoury. If this state of things be neglected, the surgeon, after curing his patient of one disease, will be mortified to find that she will be left in a worse condition, resulting in sterility, painful menstruation, or entire retention of the menses. By means of the uterine dilator all these disasters are prevented. The operator, in the last stages of the treatment, when he notices a disposition towards occlusion of the os by cicatrization, can introduce the dilator through the speculum at every visit, and readily correct the evil.

In using the dilator, after making a section of the cervical canal by the uterotome, it is necessary to employ it every four, five, or six days for several weeks, in order to maintain all that has been accomplished by the knife until the wound is covered by a mucous membrane. The instrument is introduced closed, then opened and withdrawn with the blades expanded. So long as it comes away stained with blood, its use must be continued, as this is the evidence that the new track made by the knife has not yet been protected by a mucous lining, and that the raw surfaces will again unite and defeat the objects of the operation. The sections should be made on both sides of the cervical canal, and extended through the internal os, while the speculum is in place. Since adopting the use of the dilator, I have discarded the bougie and the sponge-tents for the above purposes.

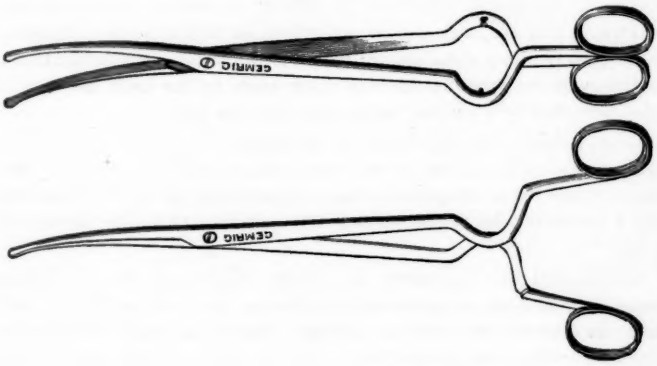
I have used this instrument for various other purposes: for dilating sinuses and fistules, and especially for dilating the female urethra to facilitate the removal of a vesical calculus. Many years ago John Rohrer made, according to my instructions, a small fenestrated stone forceps, capable of being passed through the undilated adult female urethra. Repeatedly with this diminutive forceps, aided by an anæsthetic, I have seized a

[1] *Vide* "Prize Essay. The Surgical Treatment of Certain Fibrous Tumours of the Uterus. By Washington L. Atlee, M. D." Transactions of the Amer. Med. Assoc., 1853, p. 619.

stone of considerable size in the female bladder, and by steady, gradual traction withdrawn it in a few moments, and without the aid of the knife. But in the child, where the urethra is small, the uterine dilator answers an admirable purpose, by first passing it into the bladder, then opening the blades, which dilate the urethra, and then slipping the forceps into the bladder between the blades of the open instrument, after which the latter is withdrawn, the stone seized and removed without delay.

The instrument I have in use was made, according to my plan, by Tiemann, of New York, who has them on sale. They are also made by Gemrig, 109 S. 8th St. Philadelphia, who has furnished the accompanying cut. The drawing is two-fifths less than the size of the instrument. It will be noticed that when the instrument is closed it forms the end of a probe-pointed uterine sound of small size, and is locked by a catch in the curved part of the handle. The blades are three inches in length, and the handle seven inches long—so that it possesses a pretty strong lever power.

A uterotome was constructed for me by Tiemann on the same principle. It is a probe-pointed, delicate pair of scissors, with the cutting edges on the outside of the blades. When closed, the edges are protected. It is introduced into the uterus closed, then opened, and cuts its way out on withdrawing it. It cuts on both sides at once. I prefer it to all other instruments, and have substituted it for the bistoury. This instrument is also kept on sale both by Tiemann of New York and Gemrig of Philadelphia, the latter cutler having modified the construction of the handle.



ART. XVII.—*Cases of Ovariotomy.* By WASHINGTON L. ATLEE, M.D., of Philadelphia, Fellow of the College of Physicians of Philadelphia, etc. (Reported by J. EWING MEARS, M. D., Member of the Pathological Society of Philadelphia, etc.)

CASE 213. *Multilocular Ovarian Tumour; no Adhesions; one Tapping; Operation; Incision three inches in length; Recovery.*—April 8, 1869, Mrs. J. H. B. called upon Dr. Atlee, with a note from Dr. L. P. Bush, of Wilmington, Delaware, stating that she was the subject of "encysted dropsy; effusion highly albuminous." She is twenty-five years old, was married at the age of eighteen, and has borne three children, the youngest being five months old and still living. Menstruation began at the age of fifteen, and continued regular until after marriage. When one month pregnant with her last child she was unusually large, and at six weeks her size was fully equal to four months' gestation. The abdominal enlargement became so great that Dr. Bush supposed her to be pregnant with twins. It was not ascertained that pregnancy was complicated with ovarian dropsy until some hours after the birth of the child.

January 1, 1869. Tapping performed by Drs. Bush and Porter, removing seventeen pints of thick coffee-coloured, albuminous fluid; the abdomen remained large after the tapping.

The patient is a tall woman, in pretty good health, and is now larger than a woman at full period of gestation. The tumour, composed of one large cyst with several secondary growths occupying the right side, can be readily distinguished. Fluctuation is distinct; the pelvic cavity is free; the os tincæ is thrown back; the sound enters $2\frac{1}{2}$ inches, and the uterus is movable.

Diagnosis.—Multilocular ovarian tumour.

Prognosis.—Favourable.

A short time after the patient was seen by Dr. Atlee the tumour began to increase in size and her general health failed. She weaned her child in August, and menstruation returned and became regular, remaining so until the 1st of November, when the menses did not appear.

November 10, 1869. Ovariotomy was performed at Wilmington, Del.; Drs. Bush, Porter, Askew, and others, of Wilmington, and Drs. Burpee, Mears, and Tinkham (U. S. N.), of Philadelphia, being present. The tumour, free from adhesions, was extracted through an incision three inches in length; the clamp applied to the pedicle, which was broad and of good length, and the pedicle severed. The incision was closed by five wire sutures. The time occupied in the operation was twenty minutes.

The tumour consisted of the right ovary; was multilocular; and the internal surface of the large cyst was covered at points with spots of a deep chocolate colour, which were incorporated in the lining membrane of the cyst.

Recovery took place rapidly and without any unpleasant symptoms.

CASE 214. *Multilocular Ovarian Tumour; slight Adhesions; Operation; Incision five inches in length; Recovery.*—November 26, 1869, Mrs. H. G. B., of Coeymans, New York, thirty-three years old; married at the age of twenty-one; has had two children, the youngest being eleven years old. Menstruation commenced at an early age, and although

profuse and painful, has been regular. Five months since she felt her clothing becoming tight, and noticed a general enlargement of the abdomen, without being able to detect any distinct tumour. The swelling has gradually increased, and latterly emaciation has supervened. At first she was treated for ascites by the administration of drastic purgatives. A correct diagnosis having been made by Drs. Fredenburgh and Mosher, of Coeymans, all medication was suspended, and she was sent to consult Dr. Atlee.

Examination shows that she is larger than a woman at full period of utero-gestation; abdomen uniform in shape, with a slight projection on the right side. Percussion elicits dulness over the entire surface, except in the right hypochondriac and right lumbar regions. Fluctuation not very distinct, indicating the multilocular character of the tumour. Palpation detects secondary deposits at various points. Os uteri thrown back; sound enters $2\frac{1}{2}$ inches, causing some pain; lower border of tumour occupies the superior strait of the pelvis.

Diagnosis.—Multilocular ovarian tumour.

Prognosis.—Favourable.

November 29, 1869. Ovariotomy was performed, Drs. Burpee, Girvin, Dallam, Mears, Keen, Ingham, Hoffman, Aulick, and E. R. Stone, medical student, being present. Anæsthesia having been produced, an incision three inches in length was made in the linea alba down to the tumour. A few slight parietal adhesions were broken up by the finger, and the cysts were punctured by Mears' trocar, drawing off several quarts of dark brownish fluid. After reducing the size of the tumour by the evacuation of the cysts, it was found necessary to increase the length of the incision to five inches. The extraction of the tumour was then readily accomplished, the pedicle secured by the clamp and divided, and the incision closed by six wire sutures. Vomiting occurred during the operation, but did not continue after the patient was placed in bed.

The tumour consisted of the right ovary, was multilocular, and weighed twenty pounds. The fluid contained granule-cells, plates of cholesterine, oil-globules, epithelial scales, and blood-corpuscles. Patient reacted well from the operation; the incision healed kindly, the clamp being removed on the fifth day; on the fourth day the menses appeared; on the ninth day Dr. Atlee was called in great haste, the patient being reported as suffering from profuse hemorrhage from the wound. Examination showed that the blood, which was uncoagulated, came from the patulous extremity of the Fallopian tube, embraced in the pedicle. At the time the hemorrhage occurred the patient had just changed her position from the dorsal to the lateral decubitus, and it is inferred that the menstrual fluid had collected in the uterine cavity, and was afforded by the change of position an exit through the divided tube. The discharge gradually subsided without affecting the pulse of the patient.

Five months later Dr. Atlee received a letter from the patient, informing him of her good health, and stating that at each menstrual period "the menstrual fluid shows at the lower angle of the wound." Dr. Atlee has met with several instances of this kind, in which the Fallopian tube, involved in the pedicle, is divided and remains patulous. The repeated application of nitrate of silver is the treatment employed in effecting closure of the tube.

CASE 215. *Unilocular Ovarian Tumour; Visceral Adhesions; Operation; Incision three inches in length; Death on the 2d day, from secondary hemorrhage.*—May 26, 1868, Dr. Atlee examined Mrs. A. P., of New York city, æt. forty-five years, rather corpulent, a widow, and has borne four children. Menstruation commenced at fourteen years of age, and has always been regular until five months since, when it ceased. The swelling was noticed two years since, and has increased up to the present time. She is now as large as a woman at full term, the abdominal cavity being occupied by a smooth, round, fluctuating cyst, free from nodules and ridges. The uterus is in position; the sound enters but one inch.

October 28, 1868. Dr. Atlee examined the patient a second time. The tumour has increased since last examination; slight emaciation has taken place, but her health continues to be pretty good.

December 15, 1869. Dr. Atlee was called to New York to see the patient, her general health having become impaired, and she being solicitous for operative interference. Since the last examination emaciation has rapidly advanced, and the swelling has greatly increased. The abdomen is uniform in shape, very prominent, smooth, elastic, free from hard or irregular points, and distinctly fluctuating. The contents of the pelvic cavity seem crowded down against the perineum, and the os uteri is thrown back. By careful manipulation the cavity of the uterus can be penetrated by the sound to the extent of two and a half inches. The superior strait of the pelvis is occupied by an immovable mass. Resonance on percussion exists over right lumbar and hypochondriac regions. All the signs of unilocular ovarian dropsy are present.

Ovariotomy was performed the same day, in presence of Drs. D. F. Fetter, family physician, Marion Sims, G. Thomas, Little, Nelson, Osborne, and Hurdsfield. The patient being under the influence of the anæsthetic, an incision two inches in length was made in the linea alba, opening the abdominal cavity. No adhesions being encountered by the finger, the cyst was punctured, evacuating about thirty pints of a slightly yellowish-coloured fluid. On making an effort to extract the emptied cyst, it was found firmly attached to the transverse colon by its posterior surface, by a band of adhesions seven or eight inches in length. This band was detached by dissecting off a portion of the external coat of the cyst, and allowing it to remain attached to the bowel; the bleeding vessels were secured by silk ligatures, the ends being cut off close. The incision was enlarged one inch, and the cyst extracted. The clamp was applied to the pedicle, and the cyst removed. The incision was closed by four wire sutures, and the patient placed in bed. The tumour was unilocular and consisted of the left ovary.

The patient died on the second day with all the symptoms of secondary hemorrhage. A post-mortem examination was made, and the abdominal cavity found to contain a large quantity of blood, with numerous blood-clots.

CASE 216. *Multilocular Ovarian Tumour; Inveterate Abdominal and Pelvic Adhesions; Patient not tapped; Operation; Incision six inches long; Death on the third day.*—December 9th, 1869, Dr. Atlee visited Miss E. B., in consultation with Dr. James Tyson, of this city. She is 29 years of age, a native of France, and, until a short period since, has enjoyed good health. Menstruation was sometimes delayed, and for a long time painful. The duration of the menses was three days, and they were somewhat scanty.

During the latter part of August, 1869, she was seized with a severe pain

in the right groin just succeeding her menstrual period. Previously to this date, however, she thinks the abdomen had enlarged to some extent, having noticed that her clothing was tighter at the waist, and that her abdomen was slightly prominent in sitting down. She also observed a diminution in the quantity of the menstrual fluid in July, and a diminution in quantity at the period previous to this attack. She was actively treated for inflammation of the right ovary, and was relieved. Immediately after, she had a similar attack in the left groin, and was treated and relieved as before. Menstruation has been suspended ever since the first acute attack, and she has rapidly increased in size, with a corresponding reduction of her general health and strength. Dr. Tyson states that in the early period of her disease the tumour was central, inclining to the right side, and so hard as to resemble a uterine fibroid. Latterly it has become soft and fluctuating. Drs. Da Costa and Albert H. Smith have examined the patient with Dr. Tyson, and coincide with Dr. T. in the opinion that the tumour is ovarian in character.

Examination shows the patient to be larger than a woman at full period of utero-gestation. The shape of the abdomen is quite uniform; the whole of the lower portion is occupied by a hard, non-fluctuating mass, and the upper part by a cystic tumour which fluctuates imperfectly. Percussion eliminates a resonant sound in the left lumbar and left hypochondriac regions. The abdomen is unusually dense, and the tumour almost immovable. The right side is sore to pressure. The uterus is central and healthy; the sound enters 2½ inches, and comes away unstained. Below the pelvic cavity is free, but the uterus is scarcely movable, showing that the superior strait is occupied.

December 21st, 1869, ovariotomy was performed, Drs. Tyson, Da Costa, Mears, Burpee, Albert H. Smith, and Williams being present. Anæsthesia having been effected, an incision three inches in length was made in the linea alba down to the tumour. Owing to the close adhesion of the wall of the tumour to the abdominal parietes, it was impossible to detect any line of demarcation, and, in making the section, the thin wall of the presenting cyst was divided by the knife, giving exit to a thick, starch-like, tenacious fluid. The adhesions were so firm, and the cyst-walls so thin and fragile, that they were separated with the greatest difficulty. Having exposed to view the solid portion of the tumour, the trocar designed by Dr. Mears[1] was plunged into the cyst occupying the upper portion of the tumour, and several quarts of a grayish, opaque, gelatinous fluid were evacuated. This lessened the size of the tumour to a considerable extent above, but did not reduce the size of the lower portion. The incision was now extended above and below, and the hand introduced into the abdominal cavity, with a view to detach the adhesions. This was accomplished with great difficulty, owing to the extent and firmness of the attachments. The omentum was spread over and adherent to the anterior surface of the tumour; this was gently stripped off, and the ends placed in the hands of an assistant. The descending colon was also involved. The lower portion of the tumour was firmly imbedded in the pelvic cavity, and closely adherent to the posterior wall of the bladder. The adhesions were broken up, the separation of the tumour from the posterior wall of the bladder being effected by dissecting off the outer layer of the wall of the tumour, and permitting it to remain attached to the bladder. The tumour, being now

[1] See American Journal of the Medical Sciences, April, 1870, p. 390.

separated from its attachments, was turned out. The pedicle, long and thin, was isolated, surrounded by the clamp, and severed. The torn ends of the omentum were embraced by a ligature, retrenched, and secured in the upper part of the incision. The bleeding vessels in the mesocolon were ligated, and the ends of the ligatures brought out through the incision. Two ligatures were thrown around the portion of the wall of the tumour attached to the fundus of the bladder, and secured in the lower part of the wound below the clamp. The abdominal and pelvic cavities were now cleansed, and the incision closed with five wire sutures.

The tumour involved the left ovary, was multilocular, consisting of one large cyst and a large semi-solid mass composed of numerous small cysts. A tenacious, rope-like fluid, of different colours and consistence, escaped from the cysts of the tumour during the operation.

The right ovary was slightly enlarged, but apparently healthy. The uterus was somewhat atrophied.

Dr. Atlee makes the following remarks in regard to the condition of the patient subsequent to the operation, the post-mortem appearances, and the pathology of the case:—

The patient, with the exception of some irritability of stomach, continued to do well until the evening of the 22d, the pulse being of good volume and not exceeding 110. On making my visit that evening with Dr. Tyson, it was noticed that the bandage was wet. The parts were examined, and the compress and bandage were found soaked with fluid. The following note was made by Dr. T.: "Changed compress, which was saturated with serous [?] fluid from abdominal cavity. Wound looking very well. No distension of abdomen." This discharge, no doubt, had been going on for some time, as her pulse had become more feeble and frequent. Next morning I found the patient still more feeble, and the pulse running up to 140 and 150. Several napkins had been saturated through the night by the same peculiar fluid. I at first thought it possible that, in detaching the adhesions from the posterior wall of the bladder, I had ruptured one of the ureters, and that the fluid might be urine; but no urinous odour could be discovered, and a rather large quantity of urine had been constantly drawn away by the catheter. This serous hemorrhage, if I may so designate it, continued without interruption until 4½ o'clock P. M. of the 23d, when the patient died of collapse.

Dec. 24th, twenty-three hours after death, Dr. J. Ewing Mears made an autopsy, and reported as follows: "Body fairly nourished; lower extremities œdematous; abdomen soft; no tympanitic distension. Incision united in almost its entire extent; clamp *in situ*. The lower portion of the incision was bathed in a sero-sanguinolent fluid. On removing the sutures, and separating the edges of the incision, the pedicle was found nearly severed; the ligatures all in position. No indications of hemorrhage could be found; no clots of blood; no evidences of recent peritoneal inflammation were present. The abdominal cavity contained a small quantity of a dirty-brown fluid."

I was present at the post-mortem, and requested Dr. Mears to examine the ureters and posterior surface of the bladder particularly. He reports: "The posterior layer of the peritoneum was intact; the left ureter was carefully examined, and found intact. An opening, large enough to admit the point of a uterine sound, was found in the right ureter, about an inch and a half from its point of entrance into the bladder. This opening had all the appearances of a recent wound, and was undoubtedly made in the

post-mortem efforts to remove the parts. The uterus was normal; the right ovary was somewhat enlarged, and its surface roughened. Other organs not examined."

Remarks.—The phenomena in the above case were so unique and enigmatical, that, at my request, Dr. T. reserved the injured ureter and collected some of the fluid for further investigation. Dec. 30th, I received the following note from Dr. Tyson:—

"The liquid we had removed from the pelvic cavity, for microscopic examination, was thrown away by the undertaker before I had an opportunity of so examining it. Yet I feel confident of its physical characters; for although in small quantity it was but slightly coloured, yet you will recollect that in bulk it was distinctly red or reddish-brown, showing that, although in diminished proportion, yet corpuscles were present. These were probably added in the post-mortem section of vessels. There was also utter absence of urinous odour. The ureter, at the point of rupture, I examined carefully, and find no indication of inflammatory change, so that I am confident that it was post-mortem.

"The more I reflect upon the case the better satisfied am I that that 'leakage,' which certainly came from the bloodvessels, whatever its mode of exit, had much to do with our patient's death. Why it should have occurred, except as the result of an atonic state of these vessels, due to greater debility than we thought present in the patient, I cannot tell. I have, as yet, found no parallel instance."

The above case in the character of its termination reminded me of a similar one occurring in my practice in May, 1856:—

May 13. I performed my 38th ovariotomy, removing a monocystic tumour entirely free from adhesions. The operation lasted but a few minutes, and no case offered better prospects of success. Soon after the operation the skin began to pour out copious perspiration, and the kidneys to secrete large quantities of limpid urine. The pulse gradually increased in frequency and diminished in force. This continued without interruption, the skin of the hands becoming dough-like, and shrivelled like a washer-woman's, until she died on the third day from collapse, in consequence of the excessive drain or leakage from the bloodvessels, as in cholera asphyxia. An autopsy was made ten hours after. There were strong evidences of old peritoneal inflammation, but none of recent trouble. Not a drop of blood was found in the abdomen, but there was a large quantity of grayish serum, which had exuded after the operation from the internal capillaries, as it had done from the skin. All the viscera had a healthy aspect.

This last case, the 38th, differs very materially from that of Miss B., in the fact that there were no adhesions. In Miss B.'s case the adhesions were numerous, and the liquor sanguinis may be supposed to have escaped from the ruptured vessels; but in this instance the capillary vessels were all intact, and the fluid must have transuded through the limitary membrane.

The great questions in these rare cases are the pathological condition, and the mode of recognizing it before a surgical operation. In both cases

nothing was observed to countermand an operation. In the case here reported, Dr. James Tyson surmises that the "leakage" may have been "the result of an atonic state of the bloodvessels, due to greater debility than we thought present in the patient." In further elucidation of the matter, I will make an extract from the lectures on General Pathology delivered at St. Thomas's Hospital, London, by Prof. John Simon, F. R. S.:—

"The attenuated condition of the blood produces an important secondary effect, which is worthy of notice. You know that naturally the limitary membrane of the capillaries is a transudable tissue; that it lets a certain quantity of the liquor sanguinis sweat through it; and no doubt there is a definite proportion observed by nature in the construction of the body (according to its various local necessities), between the fluidity of the blood and the thickness and transudability of that limitary membrane in the several organs where it is distributed. Now, in excessive attenuation of the blood this proportion is destroyed; the fluid is too penetrating for the tissue, and, in consequence, the membrane becomes too easily transuded by its contents. Such is the origin of those effusions into the areolar tissue (œdema) and into serous cavities, which are apt to occur when the serum of the blood is much de-albuminized. They do not arise in cases (of hemorrhage, for instance, or of chlorosis) where merely the corpuscles of the blood are relatively diminished; but only when the liquor sanguinis has undergone some considerable reduction of density by the loss of its dissolved albumen. Their origin is purely physical; the animal membrane, under the same amount of pressure, suffering the partial transudation of its fluid contents with greater facility in proportion to the limpidity and low specific gravity of those contents."—*Simon's Gen. Path.*, p. 35.

CASE 217. *Multilocular Ovarian Tumour; Extensive Adhesions; Tapped once; Operation; Incision seven inches in length; Estimated weight of Tumour* 125 *lbs.; Death on the second day.*—December 30, 1869, Mr. R. F. W., of Richmond, Virginia, called to see Dr. Atlee in reference to his wife, bringing a letter from Dr. Hunter McGuire, who writes:—

"I was requested by Dr. Marx, November 10, 1869, to visit Mrs. W. with him, and to perform the operation of paracentesis abdominis, if in my opinion her case required it. I found the abdomen greatly distended with fluid, which interfered with respiration and other important functions. In the recumbent position the belly was round, the fluid not gravitating to the sides of the abdomen, and the walls of the abdomen so tightly stretched that it was impossible to detect the existence of any tumour. No evidence of any renal, hepatic, or cardiac disease existed, as far as I know. I made no vaginal examination, Dr. Marx having informed me of its condition. I tapped the abdomen through the linea alba, and removed about [12] gallons of thick, heavy, tenacious, molasses-like fluid. As this escaped, I felt a tumour in the right iliac region, but as even slight pressure in that region seemed then to give her pain, no examination of this tumour was made at this time. Five days after, Dr. M. and myself examined the swelling. The walls of the abdomen were thin and relaxed, and we were enabled to get a good idea of the shape and size of the tumour. It was oval in shape, the long diameter corresponding very nearly with the long axis of the body. I suppose it was eight or ten inches long by four to six inches wide. Centrally it felt hard and solid, and externally it seemed to be made up of cysts of various sizes. This was the impression conveyed to me while examining it. In some of the larger cysts I thought I could detect fluctuation. I supposed the tumour was ovarian and multilocular." Subsequently Dr. F. Marx sent me the following history: "Mrs. W.'s menstrual life has been singularly free from trouble. Until October, 1868, there had been uniform regularity in the return of the menses. The previous month, at that period,

6th September, the catamenia had recurred, had continued till the 10th, then came again on the 16th, lasting a day or two, and did not recur afterward until in June, one month from the birth of the baby.

"On the 9th of November, 1868, I was sent for to see Mrs. W. for distressing nausea, and learning that her health was unimpaired, though she had not been unwell since the 14th of September, I ascribed the nausea to pregnancy. She was relieved of it by a few effervescing draughts, and I ceased to visit her. I was not again sent for until late in the next month, 25th December, and then because of pain in the left iliac region. There was at that time nothing to lead me to look for water in the cavity of the abdomen. A chloroform liniment soon removed the pain. The next summons was on the 9th January, 1869. The pain had returned with more severity. Then, too, it seemed that the abdomen was more enlarged than it would be at four months, and upon examination fluctuation was detected. By the touch, at that time, I did not perceive either shortening of the neck of the womb, or such other change as was to be looked for then. At my request, Dr. Cunningham was asked to examine Mrs. W. He was not more fortunate than I in finding evidence of pregnancy. I could not then detect fœtal pulsations or placental souffle. From that date, though, the abdomen increased slowly in size, and on the 23d May following a delicate-looking baby was born, after an easy and perfectly natural labour of a few hours' duration. The placenta was soon delivered without trouble or hemorrhage. A few doses of ergot were given through precaution only, as substitute for compress and bandage, which could not be used.

"Mrs. W. was at once much relieved in mind and body by the birth of the child, though the abdomen was still much enlarged, so much indeed that the organs within the cavity could not be reached by the hand. During the month there was not a single complaint or derangement of function of any organ. It was soon evident, however, that water was accumulating in the cavity, and, in spite of diuretics, hydragogue purgatives, alteratives, used with caution, but diligently persevered in, it reached the point where tapping became indispensable. There is no obstruction in the pelvis. I could not succeed in tracing the contour of the womb through the abdominal walls. There is a tumour in the right hypochondriac and epigastric region, extending a few inches below the ribs."

Mr. W. furnished the additional items of her history:—

His wife is 33 years old, has had three children, and a miscarriage two years before the birth of her last child. Always has been regular, and, until this sickness supervened, has enjoyed good health; was married at the age of 21 years. The enlargement before tapping was enormous, the abdomen projecting to the knees, and the umbilicus out of sight. Emaciation very great.

January 12, 1870, Dr. Atlee visited Richmond with the view of operating. The abdomen was enormously enlarged, although it had been emptied by tapping only two months before. The diaphragm was pushed up and the heart pulsated opposite the fourth rib. The only points of resonance on percussion were over both lumbar regions; the pelvis free; the uterus central; the sound entering three inches; pulse feeble.

Diagnosis.—Multilocular ovarian tumour, the large body of fluid contained in one of the cysts. The patient placed in the second class of cases.

The following gentlemen assisted at the operation: Drs. F. Marx, Hunter McGuire, Howel L. Thomas, Frank Cunningham, Charles Smith, John G. Skelton, and William F. Weinger. An incision about three inches in length was first made through a very attenuated abdominal wall immediately down to a very thin semitransparent cyst. The adhesions immediately surrounding the incision were detached by the finger, and Mears' trocar plunged into the cyst. Owing to the extreme fragility of the cyst-wall, breaking down readily under pressure of the fluid, the instru-

ment was withdrawn and the fluid caught in basins. The fluid was of a light chocolate colour, very opaque and viscid, and amounted to several gallons. The evacuation of the fluid greatly reduced the size of the tumour, leaving an enormous multilocular mass which mainly occupied the right side. The incision was enlarged to the extent of seven inches, and the hand introduced into the abdominal cavity for the purpose of separating the extensive adhesions, which attached the surface of the tumour to the abdominal walls. The large multilocular mass was freely divided by the knife and the interior broken up by the fingers. By this means the size of the tumour was greatly reduced, so that it could be extracted through the incision. The pedicle was wide at the point of attachment to the tumour, but decreased in size as it approached the uterus. It was secured by the clamp near to the tumour and divided. Considerable venous hemorrhage occurred from the points of adhesions. No arterial hemorrhage took place. The viscera generally had a healthy aspect. The left ovary was healthy. The loss of blood amounted to nearly eight ounces. The oozing having ceased, the wound was closed by eight wire sutures, and the patient placed in bed, having endured the operation without nausea.

The tumour was multilocular, and involved the right ovary. It was composed of one immense cyst and a large multilocular mass, the loculi of which were filled with fluids differing in colour and consistence. The estimated weight of the tumour was from 120 to 125 pounds.

The patient gradually sank after the operation, and died in thirty-two hours.

Remarks.—The enormous size of this tumour alone places it in the second class of cases. It dislocated and compressed the thoracic and abdominal viscera, and necessarily impeded the circulation, and impaired digestion, assimilation, nutrition, and other vital functions, so that the patient became greatly emaciated and enfeebled, and was illy capable of supporting an important surgical operation. The character of the tumour itself, apart from its size, was not calculated to favour a fatal result, if it had been removed at an earlier period of its history, before having infringed to so great an extent upon important vital organs. There, however, was a chance of life, to which the patient was entitled, and that only by ovariotomy.

CASE 218. *Multilocular Ovarian Tumour; firm Adhesions; Operation January* 19, 1870; *Incision six inches in length; Death on the fourth day.*—November 11, 1869, Mrs. L. M. B., of Minda, Livingston County, N. Y., consulted Dr. Atlee. She is 31 years of age, was married in January, 1868, and has never borne children. Menstruation began at fifteen years of age, and, with the exception of three months, has been regular until two years since—at that time the menses occurred irregularly and were accompanied by pain. Her general health has been very good until five months ago (July, 1869), when she was seized with pain in the right side, and one month afterwards noticed that her clothing was becoming too tight for her.

Examination shows the patient to be as large as a woman at the seventh or eighth month of utero-gestation. The abdomen is uniform in shape, not very prominent, and the fulness extends to the epigastrium. It is elastic everywhere, except over the right side, at which point,

embracing a space as large as a child's head, it is quite hard. On making sudden pressure with the hand over the elastic portions, deep-seated hard masses are felt as in the pregnant uterus. Fluctuation is indistinct; the superior strait of the pelvis is occupied, the inferior is free. The os tincæ is thrown back and pressed against the perineum; the cervix is flexed at the distance of one inch, and above this the uterus cannot well be defined. The sound enters three inches, and the uterus is very slightly movable by it; motion imparted to the tumour does not disturb the sound; the tumour itself, however, cannot be moved to any extent.

The absence, in this case, of the well-marked signs of ovarian dropsy rendered the diagnosis somewhat doubtful, and caused some hesitation in using the sound. Examination with the speculum, however, showed the os to be free from that peculiar livid congestion so usual in pregnancy, and also free from granulations which might be the cause of the hemorrhage (menses). Ballottement could not be obtained, and there was an absence of mammary sympathy and morning sickness. The hard mass in the right side, resembling a child's head, could not be pushed away from the abdominal wall, as in pregnancy. The consideration of these points convinced Dr. Atlee that he was safe in employing the sound, by means of which he was able to determine the diagnosis.

As the patient's health was good, the tumour small and not impairing the functions of life, Dr. Atlee advised the postponement of ovariotomy.

January 17, 1870. Mrs. B. returned to this city for the purpose of undergoing an operation. Since her first visit she has suffered very much and has increased considerably in size. The deep-seated hard masses cannot now be felt through the elastic portions of the tumour; the hard mass in the right side is larger; fluctuation is more distinct; the condition of the pelvis is the same

19*th*, 1870. Ovariotomy was performed, the following-named gentlemen being present: Drs. Burpee, Keen, Mears, S. W. Gross, Jackson, of Danville, Ky., Hoffman, Anderson, and Messrs. Stone and W. Lemuel Atlee, medical students. An incision three inches in length was made in the linea alba down to the cyst, and some slight adhesions were broken up with the finger. The presenting cyst was punctured by Mears' trocar, and several pints of thick, starch-like fluid evacuated. Behind this cyst was a large mass into which the trocar was pushed, and several quarts of dark chocolate-coloured dense fluid drawn off, reducing the size of the abdomen considerably. The incision was enlarged to the extent of six inches, with a view to remove the tumour. This could not be effected, and it was found necessary to incise the wall of the cyst, introduce the hand, and break up the small polycystic masses; in this way the size of the tumour was sufficiently reduced to enable it to be removed. The pedicle was thick, short and vascular, and was attached to left side of uterus. The clamp was applied to it, and the tumour detached. A bleeding vessel in one of the torn adhesions, between the tumour and the right side, was secured by acupressure needle; the omental vessels were ligated, and the stump placed between the lips of the incision, which was closed by six sutures, and the patient placed in bed.

The tumour consisted of the left ovary, was multilocular, and with its contents was estimated to weigh from twenty-five to thirty pounds.

Soon after the operation violent spasmodic contraction of the muscles of the lower extremities occurred. These gave the patient great annoyance; with this exception she progressed favourably until the third day, when symptoms of secondary hemorrhage and peritonitis appeared, and

death occurred on the day following. No post-mortem examination was made on account of the desire of the friends to remove the body at once.

CASE 219. *Multilocular Ovarian Tumour; Tapped four times; Extensive Omental Adhesions; Operation February 7, 1870; Incision five inches long; Death on the fifth day.*—February 2, 1870, Mrs. A. S., of Marianna, Jackson County, Florida, consulted Dr. Atlee, having come to this city, accompanied by her brother-in-law, Dr. A. S. Hall, of Halifax, N. C., for that purpose. She is 41 years old, widow; has had no children; has had one miscarriage, which was accompanied by flooding; menses appeared at fourteen years of age, and have been regular until the 4th of last August, when they ceased.

Her general health has been good until eighteen months since, when symptoms of dyspepsia manifested themselves.

In May, 1869, she noticed that her clothes were getting tighter, and she suffered with more or less pain in the left side. In July an accumulation of fluid was discovered, and this increased until November 9, when she was tapped by Dr. Hall, and five or six gallons of clear yellowish fluid were removed. After tapping, a tumour the size of an apple, and movable, was discovered in the left iliac region. The fluid accumulated very rapidly, and tapping was performed December 19, January 8, and January 24. The character of the fluid varied at each tapping, becoming somewhat thicker and more opaque. After each tapping the tumour occupying the left iliac region was found increased in size.

She was examined by Dr. Atlee February 2, 1870, and although so recently tapped (January 24), she was much larger than a woman at full period of utero-gestation. The abdomen is uniform in shape, elastic, and readily fluctuated; the tumour is mainly monocystic; a polycystic mass can be detected in the left hypochondriac region, and a smaller one in the left iliac region. The percussion sound is resonant in the highest portions of the epigastric, left hypochondriac, and both lumbar regions; at other points it is dull. The pelvis is free; uterus central and movable. The sound enters three inches, causing pain.

February 7, 1870. Ovariotomy was performed, the following gentlemen being present: Drs. Hall, of Halifax, N. C.; Warren, Sr., of Baltimore; Drysdale, Burpee, Mears, Keen, Hoffman, Ford, Taylor, Thomas, and Hall, of Philadelphia. An incision three inches in length was made in the linea alba down to the presenting cyst, which was punctured by Mears' trocar, and several gallons of starch-coloured, thin, and semitransparent fluid were removed. The incision was extended two inches, and the tumour was extracted, having been reduced in size by the evacuation of two secondary cysts, one occupying the abdominal cavity, and one situated in the pelvic cavity. The anterior surface of the tumour was covered by an expansion of the omentum, which was closely adherent. This was detached, and, after being ligated, was retrenched, and the stump placed between the lips of the wound. The pedicle was attached to the right side of the uterus, was very wide, thick, and vascular; it was crowded into one inch of Dr. Atlee's new clamp,[1] and the tumour detached. The incision, embracing the omental stump and pedicle, was closed by five wire sutures. The tumour involved the right ovary, and weighed about fifty pounds.

On the second day after the operation symptoms of peritonitis manifested themselves, and the patient died on the fifth day.

[1] See p. 370.

ART. XVIII.—*Biliary Calculus, with a Fistulous Passage extending from the Cystic Duct to the Umbilicus, through which Bile was at times discharged.* By T. G. McPherson, M. D., of Beaver Falls, Pa.

Mrs. E. M., aged 59, died after having been a confirmed invalid and almost constant sufferer for thirty years. During her protracted illness she had been the patient of a number of physicians both in England and America, without receiving any permanent benefit. Her disease had periodical exacerbations, during which her suffering was almost unendurable, extorting cries and groans, with excessive restlessness, preventing entirely both physical and mental quietude for several successive days; between these she generally was comparatively free from pain perhaps for as many weeks. These protracted paroxysms of suffering were always accompanied by the forming of a large flat tumour extending from the umbilicus back into the right lumbar region. After the lapse of a few days, the tumour would again enlarge, and a greenish-yellow matter be discharged from the umbilicus. This discharge increased in quantity for a number of days, and then gradually diminished; the accession of the discharge always diminished the pain and ameliorated her condition.

I was first called to see her in March, 1868, and found her suffering severely from abdominal pains. After hearing the history of her case, and making some inquiry in reference to her present condition, I prescribed such internal and external remedies as I thought were best suited; from these she obtained relief in a short time, and in a few days was able to walk about; a free discharge from the umbilicus having been in the mean time established. Afterward I was frequently called to see her when she was in a similar condition, and relief was apparently always afforded after a profuse discharge from the umbilicus for a day or two. This condition continued until about the last of May, 1868, when new symptoms manifested themselves, in a very frequent and very urgent desire to urinate, accompanied by constant pain in the bladder, the act of urinating being attended and followed by severe lancinating and burning pains along the course of the urethra. The urethra was, at the same time, much tumefied and excessively tender to the touch; so extremely sensitive that the parts could scarcely be examined, or any topical remedy applied. The least jarring or shaking could not be endured, and she was compelled to maintain one position of body for several months, viz., upon her back with her shoulders well bolstered, and her limbs drawn up, scarcely allowing herself to be placed in any other position for the short time necessary to change her bed.

After several months these pelvic pains became less severe, and her health somewhat improved; although micturition still continued frequent, and attended with cutting pains, until the time of her decease. She occasionally complained of aching pains in the lumbar region. Indigestion and constipation were constant features of her disease while under my care.

For a year preceding her death, I visited her only at intervals; generally finding her not suffering so much as previously, but growing weaker, and becoming more emaciated. Death ensued on the 3d of November, 1869.

Post-mortem Examination (fifteen hours after death), assisted by D.

Stanton, M. D., of New Brighton.—Body very emaciated; right lower extremity anasarcous; skin of natural colour. A *sinus* terminating externally at the umbilicus and containing a small quantity of greenish-yellow matter was explored by introducing a probe, which passed diagonally downwards and outwards between the external abdominal parietes and peritoneum, until it almost reached the right iliac crest, where the sinus became as large as to form a small sac. From this position the direction of the sinus was changed, passing upwards along the lateral surface of the ascending colon, until it approached the inferior margin of the right lobe of the liver; thence along the edge of the right lobe to the fissure, closely confined to the external coat of the gall-bladder, until it finally communicated with the cystic duct. Very firm and apparently old adhesions bound the sinus throughout the entire length. *Gall-bladder* much thickened; contained no bile; firmly contracted around a biliary calculus of an oval shape, measuring in its longer three-fourths, and in its shorter diameter five-eighths of an inch; larger circumference, two and a quarter inches; smaller circumference, two inches; weight, forty grains. Cavity of the gall-bladder so diminished in its capacity as to be entirely filled by the calculus. Ductus communis choledochus somewhat constricted at its superior portion, and very probably at times, owing to inflammation, entirely occluded; so that the bile, instead of escaping through its natural channel into the descending duodenum, was forced to seek an outlet through the sinus, terminating externally at the umbilicus. *Liver* comparatively healthy, and doubtlessly performed its function in the secreting of the bile, which, under the existing circumstances, could not enter its natural reservoir, the gall-bladder, nor at times escape through the passage intended to convey it into the intestine; but, after flowing through the branches into the main trunk of the hepatic duct, it entered the cystic duct, and from thence escaped through the sinus. *Lungs*, so far as observed, healthy in appearance, excepting the lower lobe of the right lung, which was hepatized. *Alimentary canal*, so far as examined, presented no morbid appearance. Urinary *bladder* exhibited the appearance of having been the seat of severe inflammatory action upon its external surface, the mucous membrane was not examined. *Uterus* and ovaries apparently healthy. The right *kidney* contained in its interior about a fluidounce of thick milky liquid, in which was a large quantity of triple phosphate of lime. The texture and subtance of the left one was entirely destroyed; nothing remaining in its site but a thin cyst containing a small quantity of serum.

Beaver Falls, Pa., June 1, 1870.

TRANSACTIONS OF SOCIETIES.

ART. XIX.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1870. *May* 18. *Trephining in Cerebral Disease, with a Successful Case.*—Dr. WILLIAM PEPPER remarked that it is familiarly known that the operation of trephining has been frequently performed for the relief of epilepsy. In some of these cases the practice has been purely empirical, and has been followed by no improvement in the condition of the patient. In other instances there have been more or less clear indications for the operation, and its performance has at times been followed by most brilliant success.

Among the latter may be mentioned those cases in which epileptiform convulsions have followed a depressed fracture of the skull. So, too, there are cases where a fixed and circumscribed pain, or, still more, some lesion of the external table of the skull, as an osteophyte or a spot of necrosis, has indicated the probable seat of the intracranial disease. In such instances it has occasionally happened (as in the one operated on by Mr. Cline, the specimen from which is preserved in the museum of St. Thomas's Hospital, London) that an osteophyte has been found springing from the under surface of the circle of bone removed by the trephine. In constitutional syphilis, also, it not rarely happens that grave cerebral symptoms make their appearance. In some such cases there is no external sign whatever to aid in locating the seat of disease, whether it be a periostitis, an ostitis, or a gummy tumour springing from the membranes. Even here, however, a careful analysis of the symptoms and the mode of their development will go far to determine both the nature and seat of lesion. In other cases this diagnosis is rendered more easy by the detection of some localized disease of the pericranium or cranial bones, which may be concluded to correspond with the seat of intracranial disease.

In the following case of cerebral syphilis, where the symptoms were of the most alarming character, the conjunction of rational and physical signs pointed so clearly to a localized lesion as to lead to the performance of trephining with the happiest result.

Case of Constitutional Syphilis; Febrile Symptoms like Tertian Ague; Intense Headache; Left Hemiplegia; Strabismus and Ptosis; Increasing Coma and Stertor; Node on right side of Frontal Bone; Failure of Specific Treatment; Trephining; Recovery.—A. H. W., æt. 21, single, of temperate habits, entered the U. S. army in 1860. He had previously enjoyed good health, with the exception of an attack of gonorrhœa. In 1861 he had a chancre, followed by a suppurating bubo. He

received wounds in left arm and foot, causing partial anchylosis of elbow and ankle. In 1865 he had rheumatic inflammation of knees and shoulders, and this persisted with varying severity for two years. In 1866, ulceration of hard palate; had also copper-coloured blotches on skin, nodes, and osteocopic pains. Was admitted to venereal ward of Philadelphia Hospital Feb. 19, 1868, with chancre and non-suppurating bubo. Had return of osteocopic pains, and later, about May 1, 1868, was attacked with periodic febrile symptoms resembling tertian ague, with intense frontal headache. Was transferred to medical ward under my care, May 5. Under full doses of sulphate of cinchonia the chills ceased, but intense frontal headache continued. The pain was in temples and forehead, occasionally in back of head, and was equally severe on both sides. There was also noticed a small node on frontal bone, to the right of the median line, $1\frac{1}{2}''$ above superciliary ridge. Under the idea of malarial origin of headache, the cinchonia was continued, and he was ordered arsenic and belladonna, with blisters to temples, which afforded only temporary relief. On May 23 there was slight paralysis of the left arm noticed, and a little drawing of the face to the right. There was no paralysis of the muscles of the eyes. Right pupil slightly larger than left—both movable. Other special senses not affected. Mind dull, and answers questions slowly but correctly, and no convulsive movements. He was immediately ordered iodide of potassium gr. v, and bichloride of mercury gr. $\frac{1}{16}$, thrice daily. The paralysis increased rapidly, becoming complete, with implication of the sphincters, by June 2. Electro-muscular contractility and sensibility seemed impaired on both sides, though more so on left side. Speech much affected, without any true aphasia. On June 6 paralysis remained the same; spasmodic twitching of palsied leg; high fever; pulse 108 to 112, with occasional profuse sweats; mind was dull. The doses of potassium and mercury were increased.

On June 11 heat of skin and acceleration of pulse continued. Slight internal strabismus of right eye noticed, with slight ptosis. On June 12 there was so marked a tendency to stupor that it was impossible to arouse him completely. Respirations were twenty in minute, stertorous—both cheeks puffing. Evident impairment of power on right side. Pulse 120, and feeble. Speech very imperfect, but dulness of mind too great to enable it to be said any aphasia was present.

On June 14, his condition remaining the same, a consultation was held with Drs. Maury and Rhoads, and it was determined to remove by the trephine a disk of bone from the portion of the os frontis corresponding to the node. The operation was very successfully performed by Dr. Maury. It was followed in about five hours by a slight convulsion.

The disk of bone removed presented a high degree of hyperostosis with sclerosis. The under surface was marked by irregular ridges and enlarged vascular pores, indicating a process of chronic inflammation of the dura mater. It was evident, however, that the diseased condition of the bone was by no means limited to this part.

In course of next forty-eight hours his condition decidedly improved. The respirations fell to 14, and became less stertorous. The pulse fell to 106, and became more regular and of better volume than for two weeks previously. Strabismus disappeared, articulation improved, and he expressed himself as feeling brighter and better. Treatment was continued (potass. iod. gr. x; hydrarg. bichlor. gr. $\frac{1}{8}$ t.d.).

From this time his improvement steadily continued, his mind grew

more clear, and, by June 25, all traces of dulness had disappeared The febrile symptoms also subsided. Strabismus and ptosis disappeared, and speech rapidly improved. The power of motion returned more slowly in arm and leg, but in ten days' time from operation he was able to lift his leg clear of the bed. The dura mater bulged quite markedly into the opening made by the trephine. A small amount of healthy discharge occurred each day from the bone and soft parts.

In the course of two months he became able to walk with the aid of a crutch. He gained flesh and strength; his functions were all well performed; has had no return of headache or paralysis; wound still discharging; the cicatrization is advancing. Iodide of potassium (gr. x four times daily) has been continued; the mercury being suspended. In December the cicatrix on forehead opened, and it was found that some necrosis of the rim of bone surrounding the opening had occurred.

By March, 1869, all traces of paralysis of the face had disappeared, and he was able to walk quite well with the aid of a cane, though still obliged to swing left leg somewhat. The power of motion in left arm had not been so much recovered. There was marked impairment of motion of forearm muscles, with tendency to contraction of the flexors. The real improvement in power was much masked by the difficulty of motion in left arm and leg resulting from gunshot wounds. Still continued to take iodide of potassium, with occasional intermission of a few weeks, during which he always felt worse, and begged for a resumption of the remedy.

On June 24, 1869, an almost complete ring of necrosed bone was removed from around the point of trephining, and on August 25 another small piece came away, after which the wound assumed a healthy appearance, and healed by granulation.

He gained flesh rapidly, and when he left the hospital, early in 1870, presented the appearance of vigorous health. He had regained good power over muscles of shoulder and arm, but those of forearm were still rigid and contracted, holding hand placed at right angle on forearm. He had quite good use of leg, and walked without swinging, merely advancing it in a hesitating way. There were no evidences of any return of cerebral symptoms. The use of iodide of potassium was, however, maintained, with occasional intermissions.

At the time when these cases, upon which this brief paper is based, occurred, I was not aware of any recorded cases in which trephining had been performed for the relief of cerebral symptoms due to syphilitic disease of the brain or of the bones of the skull. Since then, however, I have met with several such cases, to which I will allude in the order of their occurrence:—

In the 1st volume of the *Dublin Hospital Reports*, p. 342, a case is reported, by Sir Philip Crampton, of a woman, æt. 32, who was admitted into Meath Hospital on December 14, 1812, with a tumour about the size of a half walnut over the middle of the left parietal bone; soft and elastic at the centre, and with a small fistulous opening leading down to the bone, which was bare and necrosed. This was attributed to a blow. The right arm was palsied and atrophied; the speech indistinct; and there was marked emaciation and pallor. There were also frequently recurring epileptiform fits. An incision was made through the tumour and the skull trephined beneath it. The dura mater bled freely, and was highly vascular. The patient steadily improved, and in six weeks was

able to return to her occupation, having entirely recovered use of her right arm.

It is not improbable that the nature of the disease in this case was syphilitic.

In the *Medical Times and Gazette*, August 18, 1860, Mr. Jno. T. Bryant reports the case of a patient admitted to Guy's Hospital, February 14, 1860. He denied ever having had a blow or having contracted syphilis. For months previously a painful swelling had appeared over the left parietal bone; this suppurated and was opened. In February epileptiform convulsions (without loss of consciousness, and affecting chiefly left side of face and right side of body and right hemiplegia) appeared. Death appearing imminent, trephining was performed on February 17, over seat of disease on left parietal bone. On inner surface of circle of bone removed was a nipple-shaped osteophyte. The dura mater was inflamed and granulating. The fits ceased after the operation; the man, on regaining consciousness, expressed himself as well. All pain in the head had ceased, and the paralysis gradually disappeared. The opening made in skull gradually filled in; the bone, however, was still inflamed and roughened, and necrosed.

On February 24 slight fits occurred; and on April 24 they became reestablished, and recurred at short intervals till June 24, when he died hemiplegic, with pyæmic symptoms. There was extensive disease of parietal bone. The dura mater was adherent and softened, and pus was found both below and above it. Syphilitic deposits were also found in the testes, liver, and spleen.

In the report of the *Transactions of the Royal Medical and Chirurgical Society*, on June 26, 1860, published in *Medical Times and Gazette*, August 25, of same year, there is an abstract of a paper read by Mr. Henry Lee, upon this subject. This paper was not published in extenso in the Transactions of the Society, so that the abstract is my sole authority. In this paper Mr. Lee recounts the history of three cases of syphilitic disease of the bones of the skull, accompanied with marked cerebral symptoms, in which trephining was performed with marked relief in two of the cases. In the first case there was syphilitic necrosis of the left side of frontal bone, and of part of left parietal bone. The patient presented marked general debility, loss of sensation on right side of the face, and deafness in both ears.

The operation of trephining was followed by general restoration of health, recovery of sensation of the face (with exception of a small portion of the right side of the upper lip, which still remained numb), and perfect hearing. The inner surface of the portion of bone removed presented a very uneven surface, from whence numerous small, irregular spicula of bone projected.

In the second case there was extensive disease of the outer and middle tables of the skull. In consequence the patient became affected with severe convulsions, without loss of consciousness. The application of the trephine in this case was made over the right temporal bone. The portion of the internal table removed was slightly roughened, but not nearly so much as in the preceding cases. The fits recurred a few days after the application of the trephine, but ultimately ceased, and the patient was restored to comparative health.

In the third case there was extensive destruction of bones of skull, and in one place the inner table had perished while the outer and middle

tables still maintained their vitality. At this point effusion of plastic matter had taken place, and the disease had spread by continuity of action to the brain, and produced red softening. There was no disease, either in the brain or its membranes, in those situations where the entire thickness of the skull had been removed. The patient was comatose at time of operation. The trephine was applied to the right parietal bone, but did not hit the exact spot where internal table was destroyed. The softening of brain having already occurred, the coma persisted, and patient died.

Still another case has been more recently published in Germany. The following is condensed from a more full account of the case :—

Syphilitic Necrosis of an extensive part of the Frontal Bone, Right Hemiplegia, and Consecutive Aphasia; Threatened Fatal Termination; Trephining with Favourable Results.—By J. A. VÈDRENES (*Rec. et Mêm de Mêd, etc., Milit.*, 3 sér. xx. p. 42, January, 1868), in *Schmidt's Jahrb.* Bd. 144, 1869, p. 162.

The patient was a soldier, aged 29, of strong constitution. He contracted a hard chancre, which was followed by bubo, and in six weeks by roseola, alopecia, and enlargement of glands of neck. Soon after, numerous tubercles appeared on forehead and extremities. By end of second month, an abscess had formed over upper part of forehead, communicating with necrosed bone. Throughout third month, the patient suffered with intermittent febrile attacks, and lost flesh and strength. He was treated with quinia, iodide of mercury, and iodide of potassium. Some improvement of general health followed, the necrosis of frontal bone slowly progressed. By tenth month, his general health was much improved, and a small sequestrum from outer table of frontal bone was removed. By end of the year, the fistulous tracks on forehead were cured; but soon after swelling of gland and tubercles reappeared, with intense headache, loss of sleep and appetite. Neither iodide of mercury nor iodide of potassium had any influence upon the symptoms, and in a few days aphasia and impairment of sensibility on right side of body appeared. Three days later, delirium and general muscular spasms occurred. The patient's condition grew worse; the eyes were turned inwards, the limbs were relaxed, or at times tremulous; the breathing was frequent and jerking, the pulse 135 to 140 in a minute. As a last resort a crucial incision was made over necrosed portion of bone, and the crown of a trephine $1\frac{1}{2}$ centimetre in diameter applied. The cutter was applied in middle line of left half of frontal bone, 9 centimetres above the corresponding eyebrow. Immediately after removal of the piece of bone, he opened his eyes, looked about with an astonished expression, yawned, moved his head in answer to questions, and said "yes." By examination with the finger, the inner table of skull was found intact.

A few drops of thick, bloody fluid escaped from the wound. The pulse fell to 84 in minute. The patient's condition improved much during the next three days; he became more intelligent, motion on palsied side increased, pulse sank to 80. On fifth day he could say some short words, had more power of motion, and pulse was 72. The firmness of frontal bone was destroyed, and it could be depressed, and a little pus came from under the sequestrum. The seventh day after the operation, several pieces of bone were removed. Subsequently other sequestra were removed; the patient improved daily, soon became able to say several words, and recov-

ered power of motion. On twenty-first day he was able to sit up, and speak much better; the wound had, to a great extent, healed, though several splinters of bone remained to separate. On twenty-seventh day, there was recurrence of delirium, convulsions, and increase of right hemiplegia. The pulse was normal; there was a tendency to masturbation. There were no unusual appearances about the wound. The condition remained thus for several days, and then a slow improvement began. Fifty-one days after operation, several splinters of bone were removed. The patient became able to stand and walk, intelligence improved, but the hemiplegia remained unchanged, and the aphasia diminished slowly, so that after a lapse of several months he could only pronounce single words.

Remarks.—The advantages offered by the operation of trephining in the case I have above recorded were numerous.

In the first place, there was a certain degree of hope that there might be found a node springing from the inner table of the skull at a point corresponding to the one growing from the external table. But even in the probable event of not finding such a localized growth, it was most likely that there was diffused disease of the frontal bone and dura mater spreading from the base of the external node as a focus. It was thought, therefore, that it could not fail to be of advantage to remove so much of the source of irritation from the surface of the membrane. In addition to this, it was likely to be of benefit by diminishing, even if to a trifling extent, any pressure that might be caused by the thickening of the frontal bone and dura mater, as well as by allowing the discharge of any effusion that might have formed between the membrane and skull. A further object was to establish a process of healthy suppuration from the exposed surfaces of the dura mater, bone, and soft tissues around it, which might act as a derivative, and tend to prevent the spread and continuance of the inflammatory process in the surrounding bone and meninges.

Finally, it was evident that the rapid aggravation of the symptoms threatened a speedily fatal termination to the case, and that if time could be gained by the operation, a further opportunity would be afforded for pushing the use of antisyphilitic remedies, whose remarkable efficacy in the treatment of syphilitic cerebral lesions is so fully attested.

It may also be remarked, as a further point of evidence in favour of the operation, that in the only fatal case of the three reported by Mr. Henry Lee, the fatal result would seem to have resulted in great part from the fact that the external table of the skull remained entire after the inner one had been destroyed, thus giving an opportunity for the irritating pus to accumulate, to press upon the surface of the brain, and to induce inflammatory softening of its tissues. In estimating the results of the operation in the case I have reported, it seems to me impossible to avoid acknowledging that it was the chief means of saving the life of the patient. Examination of the portion of bone removed shows that it by no means embraced the entire extent of the disease; but its removal was followed by such rapid and positive amelioration of the symptoms present, as to convince all who saw the case that the operation exerted a most happy influence on the patient's condition. It may be thought that the operation might have been avoided had iodide of potassium been administered in doses much larger than were employed, viz., gr. x, four times daily. I confess that at the time this case was treated (1868), I was not so familiar as at present with the wonderful effects of very large doses (gr. xx, or xxx four times daily) of iodide of potassium in syphilis of the nervous system.

But, even with the encouraging experience of the past three years, I feel that W.'s condition was so desperate as to have, in all probability, resulted fatally, had not the operation of trephining been performed.

Dr. WILLIAM GOODELL remarked that this able paper of Dr. Pepper's reminded him of a case which came under his observation in Constantinople, but so many years ago that he was afraid he could not give the symptoms correctly, nor in the order of their sequence. An educated Armenian gentleman, with no known syphilitic taint, amiable, intelligent, and in easy circumstances, was attacked with severe hemicrania, limited, like clavus, to the middle of the right parietal bone. Without any relief whatever, quinia, blisters, setons, issues, mercury, iodide of potassium, frictions on the tongue and gums with the chloride of gold, etc., were prescribed, either by Dr. G. or by a large number of consulting physicians. He daily grew worse; became very irascible; began to stumble in his walk; aphasia soon gradually developed itself, finally dysphagia; and at last he became perfectly helpless, sitting on a sofa, with his head on a cushion, constantly moaning. From paralysis of the buccal muscles he was obliged to give up his pipe—considered in Turkey as a very fatal sign; but intelligence was not wanting, for he was capable of understanding, although not of articulating any but one or two guttural words. For a change of air he was removed to a village in the mountains, and, for several weeks, passed from Dr. G.'s observation. During this time an Italian surgeon, who had been roving over Turkey and Persia, cutting for stone and extracting cataracts, put up at this village, and succeeded in making a transient reputation by successfully opening a large psoas abscess, which no other physician would touch. He was accordingly called in, and, after vainly resorting to gamboge and other drastic cathartics, advised the trephine. The patient evidently understood this proposal, for he shook his head, and for several days kept repeating the word "Goo, Goo," sometimes shouting it at the top of his voice. In the Armenian language this word is a contraction for "come, come;" but when his wife and children gathered around him, in obedience to this supposed summons, he became very angry, and repeated the word with still greater energy. At last a quick-witted hunchbacked foster-brother suggested Dr. Goodell's name to him, when a loud outcry of assent, followed by a flood of tears, indicated that he had guessed right. A messenger was accordingly despatched for the doctor, who found the patient sufficiently conscious to evince great pleasure at his arrival, and to quietly submit to the operation, after it had been represented to him as his only chance. The Italian surgeon accordingly trephined the skull over the seat of pain, but there was not the thickening of the bone, nor the disease of the dura mater, which were anticipated. As this membrane pouted up through the opening, it was cut with a bistoury, when a considerable amount of limpid serum escaped. Almost immediately after the patient drew a long breath, and called out "Wife! bring some pipes"—or words to that effect—this being always the first act of courtesy to strangers. The family, who were in the next room, upon hearing these words—the first he had uttered for months—rushed in, and, after kissing the feet and still bloody hands of the physicians, embraced the patient in the most extravagant and affecting manner. The headache disappeared like magic, and, for two or three days, he was able to converse in an intelligible, although not in a grammatical manner. Strong hopes were entertained

for his complete recovery, but, unfortunately, hernia cerebri set in and carried him off.

Dr. WILLIAM PEPPER, in illustration of the influence of trephining upon epileptiform convulsions, even when no local lesion is discoverable, referred to a case of epileptiform convulsions, and unconsciousness in the intervals, following a blow on the head with a heavy whip-handle, which was relieved by trephining in conjunction with venesection. In this instance there was no observable lesion either of the skull or dura mater. The lad recovered completely. (Dr. J. Forsyth Meigs, *Penn. Hosp. Rep.*, vol. ii., 1869, p. 181.) A similar case was under the care of Mr. A. Poland, in Guy's Hospital, about the same time. A boy had severe epileptiform convulsions and unconsciousness, following a severe blow on the head. He was trephined, and recovered perfectly. No local disease could be found. (*Med. Times and Gaz.*, Sept. 26, 1868.)

Dr. JOHN ASHHURST, Jr., referred to the well-known fact that epilepsy was frequently cured temporarily by modes of treatment which produced strong and sudden physical or mental impressions, and alluded to the former use of tracheotomy in this affection.

Dr. W. PEPPER said that the cases of which he had spoken differed in many respects from ordinary true epilepsy, the convulsions being evidently epileptiform in character.

Case of Anosmia.—Dr. HAMILTON related a case similar to one, the account of which had attracted his attention in the No. of this Journal for April, 1870, p. 537, of the loss of the sense of smell following a blow on the occiput. He was called, one morning, to a druggist, who, after closing his shop on the previous evening, had fallen backward while conversing with a friend. He was slightly stunned at the time, but soon revived. Pain, however, disturbed him during the night, and there was much swelling at the back of the head. A brisk purge was ordered, with cups and cold locally. After five or six days of suffering, from severe pain in the occipital and frontal regions, and intolerance of light, complete recovery took place, but the sense of smell was gone; and this condition persisted at the end of eighteen months. The cause of the fall was doubtful, and he was uncertain whether to refer the abolition of smell to it, or to the blow, or to some peculiar character and exceptional product of the ensuing inflammation. The patient had been healthy, and was not subject to fainting, but had been overtasked, mentally and physically, during several previous months.

July 6. *Simple Acute Meningitis.*—Dr. A. STILLÉ desired to call attention to some points in a case which was recently under his care in the Philadelphia Hospital, and which served to illustrate the general law that simple acute meningitis is never idiopathic. A man affected with chronic tubercular phthisis had been under observation for several weeks, and his pulmonary disease advanced slowly during this period, without presenting any peculiar features, and not even the local complications which are usual in that disease. One day he was suddenly seized with a chill, and, at the same time, with a severe pain in the head. Soon active delirium ensued, with such violence as to render the confinement of the patient necessary. He had fever, a hot head, and an excited expression. These symptoms were followed by coma and collapse, and death took place without having been preceded by paralysis of any part. On examination of the body after death, no tubercle, nor any granular

condition of the cerebral membranes was found; but the meninges of the convexity of the brain were very much injected, and the pia mater of the same part was filled with pus and lymph. The corresponding cortical substance was also softened.

Sept. 7. *Stöhrer's Zinc-carbon Battery.*—Dr. WILLIAM PEPPER exhibited this instrument, which is for office use, and gave the following description of it:—

The instrument is made by Dr. Emil Stöhrer, of Dresden, and is, in every respect, highly satisfactory. The battery is composed of 32 zinc-carbon elements, hung by copper wires from a central bar, which crosses the top of the box containing the apparatus; they can be lifted off and replaced at will, so as to be cleansed or have new plates attached. The points of the copper wires enter small holes in the bottom of a groove in the central bar, and come in contact with a metallic conductor, by which the connection is made between adjoining elements. The cells containing the acid solution (1 pt. SO_3 to from 8 to 12 pts. of water) are arranged on a shelf, which is raised by handles moving through two vertical slits cut in each end of the box. The battery is put into operation by raising this shelf until the zinc-carbon elements are immersed, and then securing the drawer in this position by a simple contrivance. The number of cells from which the current is collected can be regulated at will, by sliding a little block bearing the poles, to which the electrodes are to be attached, along the groove in the central bar before mentioned. There are two copper clips projecting from the under surface of this block, which press against the copper wires attached to the elements, and thus establish the connection. There is also a commutator arranged on this block, by which the direction of current may be changed at will. It is, of course, a simple matter to produce interruption in the current, by introducing a telegraph key into the circuit.

The intensity of the current is capable of ample variations, and ranges from a feeble current from 1 or 2 elements, which might be passed through an induction coil and used for faradization, to one from 30, which will rapidly produce an eschar. It is, however, impossible to regulate the quantity of current, except by altering the amount of fluid in the cell, because the shelf which holds the cells can only be secured at one height. A very trifling addition removes this difficulty, and I have had two slips of metal attached to either end of the box parallel to the slit through which the handle moves, and having little projections at short intervals from each other, across which metal bars are placed, which thus enables the shelf to be retained at the height which will secure any requisite amount of immersion of the plates in the acid liquid. The current is extremely constant, and the entire apparatus requires no other attention than renewing the solution at long intervals. To prevent the amalgamation of the zinc plates from being impaired, a small amount of sulphate of mercury is thrown into each cell. The physiological effects obtained by the current derived from the battery are very striking, and I have already obtained gratifying success in several cases by its use as a therapeutic agent.

Oct. 19. *A New Apparatus for Generating the Vapour of the Muriate of Ammonia.*—Dr. HARRISON ALLEN exhibited an apparatus for this purpose, consisting of three flask-shaped vessels connected by India-rubber tubing, the first containing muriatic acid, the second liq. ammoniæ,

the third, an intervening one, holding a small quantity of water. A current of air, created by the use of Richardson's apparatus, is made to pass through a "yoke," which enables both the acid and ammonia vapour to be received in nearly equal amount in the third flask, whence the vapour of the nascent muriate of ammonia is conveyed through tubing. The plan, it will be observed, the speaker remarked, is essentially the same as that figured by Trōltsch. The greater convenience of the instrument under notice is expressed in its compactness and portability; the entire apparatus, with accessory flasks to prevent regurgitation of the fluid along the tubing when the fumes are subjected to some pressure, is supported on a small walnut stand, and can be covered by a glass 6½ inches in diameter.

To Dr. W. H. Trueman is due the credit of thus making the apparatus elegant in appearance and suited for office use.

It is more particularly in the treatment of subacute catarrh of the mucous tract of ear that the fumes of muriate of ammonia are useful. In such class of cases the instrument can be placed alongside the patient and the fumes readily passed through the Eustachian catheter to the desired position.

Dec. 15. *On the Growth of the Nails as a Prognostic Indication in Cerebral Paralysis.*—Dr. S. WEIR MITCHELL read the following paper:—

During the last winter I saw Mrs. B., æt. 56, immediately after an attack of cerebral palsy. This lady had been previously in good health, and free from disease of the heart. In the evening, after dinner, while reading, she complained of headache, which increased during an hour, and was followed by sudden loss of power, complete in the left leg, and incomplete in the face and arm of the same side. There was no sensory loss, and the articulation was but slightly altered. The only remote prodrome was pain at times in the two limbs affected, but chiefly in the leg—a symptom which she ascribed to rheumatism, but which, whatever its cause, I have met with many times in persons afterwards afflicted with palsy on the same side. Without being confident of its value as a precursory sympton, I may state that in these patients there was often no rheumatic pain in the opposite side, or elsewhere. Mrs. B. had but little intellectual disturbance, and no loss of consciousness. She slowly recovered, so as to be able to walk quite well; but the arm, after improving for two weeks, again became weaker, and finally, after some months, grew gradually well enough to be used in knitting or in holding a book. The finger-nails on the left side, which were previously healthy and rather large, became marked with deep serrations, crossing from side to side, and about one line apart. This peculiarity remained so long as she was under my care, the growth being much slower than that of the nails of the healthy arm. I regret that I did not examine the feet.

Struck by these peculiarities, I did not fail to study the nail-growth in the next case of like nature. In May, 1870, I saw a gentleman, æt. 47, the night of an attack of severe apoplexy. He was a large, ruddy person, and he also had no heart disease, but had been subject to great strain, both mental and physical. He had for a week slight defect of memory, great weariness, and occasional vertigo, with a hissing sound in the right ear, which was worse after meals. The attack came on while he was pulling off a boot at night. He fell, slightly convulsed and unconscious, and when I saw him was able to lift the palsied hand with the other to direct

my attention to it. His articulation was thick, his face strongly drawn to the left, and his tongue, when thrust out, deviated to the right side. The arm and leg were perfectly sensible, but he could stir neither of them. The leg recovered rapidly, and in a week he could walk a few steps, pushing a chair before him with the sound hand.

The morning after his attack, I stained four of the nails of the palsied right hand, down to the lower edge, with nitric acid, which tints these parts of a deep and quite lasting yellow, hoping thus to learn whether they would grow as fast as those of the other side. To my surprise, while the left healthy nails grew as usual, the right nails did not grow at all during three weeks. Then, and while the arm was throughout still motionless, the nails began to grow, as was shown by a narrow line of white below the tinted portions. Within a week after this the fingers became controllable by the will, and gradually the whole hand and then the arm was restored, so as to perform any except the most delicate tasks required of it.

Oct. 16, I attended Mr. C., æt. 46, who was suffering from great mental excitement concerning an election in which he was interested. His previous health was perfect. While lying in bed in the evening, somewhat drowsy from a small dose of morphia, he felt his right thumb drawn into the palm; then the forearm flexed strongly on the arm, while the right face twitched slightly, and in a few moments the right arm and leg became entirely paralyzed, as to motion only. There was no deviation of tongue or face, but he could not carry either eye fully to the right side. With these symptoms there was nearly complete aphasia, his only word being "yes." On the 17th he could make negative signs with his head, although still saying "yes" to every question. On the 18th he was able to say "yes," "no," and "certainly," and could repeat after me many simple words. Oct. 20. His right hand is slightly œdematous, and he now for the first time moves his toes. His vocabulary is enlarging, but he makes the usual curious blunders, and when trying to read aloud, frequently stops at long words and miscalls them; says he understands what he hears and reads.

The temperature of the right palm was at this time 95⅘°, left 97⅖° F. Ever since the attack he complained of pain in the right shoulder and of the occasional spasmodic flexion of the thumb and fingers. At this time, the fourth day, the hand being moveless, I stained the nails, except that of the little finger, on both hands. Not the slightest growth took place on the palsied side until November 2, when, seeing a line of white above the quick, I risked the prediction to his wife that within a week he would begin to move the limb. On the fourth day after, the thumb recovered some slight power, and the rest of the limb rapidly followed it, so that every muscle was under control on November 9, although for some time the extensors of the fingers moved with difficulty, because of the continued but lessening spasm of the flexors. The whole history of these cases I have not given, thinking it enough to relate so much of them as was sufficient for my present purpose.

Perhaps, also, I ought to excuse myself for reporting but two distinct cases, in place of waiting until numerous opportunities enabled me to be more sure of the constancy of the facts related. Cases of this kind, however, seen early, may not recur very often under my own eyes, and I shall probably increase the chance of studying this curious symptom by making it public.

Even now it suggests some reflections which I must be pardoned for intruding, because they will to some extent guide any future observer.

I have been unable to find that this observation has been made before. In old cerebral palsies the nails very often become deformed, and even the muscles may undergo changes which are possibly due to the neural sclerotic alterations which sometimes come on after the part has been long disused. They are then the direct result of isolation from spinal trophic influence. In recent cerebral palsies there is often œdema, but no muscular atrophy; and it is, therefore, remarkable that the nails should ever suffer in their nutrition. It is still more curious, when we reflect that even in parts whose nerves are severed, the nails grow as usual, and that chiefly in partial nerve-wounds do we meet with clubbing or serration.

It seems as if the injury to the brain must have exerted an inhibitory influence, and the fact aids, to my mind, the view which I hold with many, that there are nutritive nerves. Theorists who follow Brown-Séquard, would probably regard the checked growth as due to a spastic contraction of the vessels feeding the nail, and as a vaso-motor nerve impression.

I cannot admit this, because no conceivable amount of such spasm could last long enough or be complete enough to cause the result without making a visible difference in the tint of the nail and the thin parts at its matrix; and these remained much as usual, perhaps even a little redder than common. To test this view, I faradized with a secondary current and dry wire brush two of the nails daily, giving great pain and intensely flushing them. They were also kept thrice a day, for a half hour, in hot water, so as to flush them as much as possible. My patient, an intelligent person, being much interested in the question, submitted readily to this treatment, but no more growth took place in these nails than in the others. I have noted the lower temperature in the last case; but in hands cut off from all nerve connection, it is still slower, and yet the nails grow. It does look, therefore, in this case, as if some influence was at work here which did not act through a change in the vascular supplies. It is a point in favour of trophic nerves.

Other and most interesting questions also present themselves. The re-growth preceded the return of will power. If this should prove constant or common, it will certainly help us to answer the inevitable query as to whether the arm will recover at all, and how soon.

It is, of course, desirable to learn how often this check of nail-growth occurs—whether in all cerebral palsies or only in certain ones—whether, in a word, it relates itself to particular brain regions, and is a direct effect, or arises from the spinal shock which these brain injuries occasion.

I trust that I have been able to show, therefore, that this apparently trifling symptom may open the way to the solution of very important questions, and is certainly not devoid of interest for the most purely practical among us.

1871. *Jan.* 18. *Physiological Action of the Nitrite of Amyl.*—Dr. HORATIO C. WOOD called attention to this article, which had been used more particularly for the relief of angina pectoris. Certain cases have been reported of intense cardiac pain, in which chloroform caused only a temporary relief, but in which cases nitrite of amyl had produced an immediate and permanent effect. This substance, he said, had some very remarkable physiological properties which had tempted him to

an investigation, which compelled him to form conclusions somewhat different from those of Dr. B. W. Richardson. Dr. Richardson says that the first prominent effect of this drug upon animals is a great excitation of the motor system. Dr. Wood did not find such to be the case. He had given it in a large number of cases to pigeons, cats, and dogs, and in the majority of instances it produced a state of gradually increasing paresis. Occasionally, however, the steady, onward course of weakening is interrupted by convulsions, especially in pigeons. One of the most marked and peculiar effects of the drug when taken into the system is the prevention of the change of venous into arterial blood. The blood in all the vessels very soon becomes of the same, or nearly the same hue, and he had found that this was not owing to any action on the nervous system, for it is impossible to oxidize, or at least to produce the change of colour commonly attributed to oxidation, in venous blood which has been drawn from the body, and had a portion of the amyl salt added to it.

He had investigated its action upon the nervous system very carefully, and found that it does not destroy the conducting power of the nerve-trunks, although it impairs that power. He had poisoned a frog with nitrite of amyl and exposed the crural nerves, and found that the nerves responded to strong stimuli, which caused motion in the lower muscles of the leg, but he always failed in such cases to produce reflex action. Feeble stimulation failed to elicit muscular contraction, and while the power of the muscle to contract is impaired, it is never destroyed except where the nitrite of amyl is applied locally. So far from being a powerful cardiac stimulant, it is in animals a direct depressor to the circulation. It increases the number of heart-beats, but it never increases the force of its action. The force of the individual heart-beats is not much affected early in the action of this drug. There are several reasons for supposing that it causes dilatation of the capillaries. There is produced, when it is first taken into the animal in any way, lessened arterial pressure, probably by such dilatation, and by and by the heart itself begins to slacken in power. When this substance is applied to muscles of organic life it appears to act precisely as it does on the voluntary muscles. One of the most curious effects the speaker knew of is its local action. It is not an irritant, and yet when kept long in contact with a tissue it produces death of that tissue, and this applies equally to muscular and nervous tissues. In the majority of cases, when it is simply thrown hypodermically into the muscles there is but little effect, but if kept long in contact with the muscle it produces complete death, local putrefaction following.

In the case of this drug, we appear to be on the very verge of settling how at least one medicinal agent acts upon the tissues of the body. This drug has the curious chemical property of checking oxidation. He had placed a piece of phosphorus in a jar, put the jar in water raised to 112° Fah., taken it into a dark room, and the phosphorus was seen to glow most vividly. He then put five drops of nitrite of amyl into the bottle, and instantly the phosphorus was extinguished. Here oxidation is evidently arrested, and there is apparently, as already stated, a similar action on the blood in the body. It would seem, then, that nitrite of amyl acts on the system by checking the chemical changes which are necessary to the exercise of any function whatever. If this be so, we we may anticipate its influence on the animal temperature, and on the elimination of carbonic acid gas. It lowers the animal temperature to a degree which is almost unheard of in the history of drugs. He had

witnessed a fall of 12 degrees in the temperature of an animal which had been given nitrite of amyl, and yet death was not produced. The animal seemed perhaps a little giddy, but otherwise just as before taking the drug. He had not as yet had time to take the next step, to discover whether it arrests the elimination of carbonic acid. If this experiment should prove what he supposed it would, it would furnish almost absolute proof that the nitrite of amyl does prevent tissue change. Then every man can draw his own inference as to whether this is the actual cause of its action on the body.

These investigations strike a heavy blow at certain theories in regard to the cause of the action of anæsthetics. It has been asserted that the cause of anæsthesia was the fact that the drug prevented oxidation. Now, here we have a drug which appears to and does prevent oxidation, and yet the very last tissue to be affected is the brain-tissue, the animal preserving its consciousness to the very end. Consciousness and sensibility are two of the last functions which are annihilated by the nitrite of amyl.

Large Stone removed from Female Bladder.—Dr. W. F. ATLEE presented a stone removed by rapid dilatation of the urethra, from the bladder of a woman.

The stone is a hard one, $3\frac{1}{10}$ inches in its greatest circumference, and $2\frac{9}{10}$ inches in its smallest; its weight is 220 grains. The patient was seventy-three years of age, and submitted to the operation on account of the violence of the pain, which was almost incessant. To dilate the urethra, the patient was rendered insensible by the inhalation of chloroform, and Holt's dilator for the sudden cure of stricture was used. Afterwards an ordinary dressing forceps was passed and withdrawn more and more opened, some half a dozen times. There was some hemorrhage for a day or two after the operation, and, of course, considerable soreness was felt for some five or six days. There was, however, never at any time any difficulty in retaining the urine in the bladder. The operation was performed last August, more than four months ago.

Complete Excision of the Astragalus and Os Calcis.—Dr. T. G. MORTON presented a case of excision of these bones, with the following notes:—

D. C., aged 13, was admitted into the Pennsylvania Hospital Sept. 27, 1869.

He had received an injury of his left heel in January, 1868, an abscess quickly formed, and the foot was much swollen. The pus found an exit after several weeks, and sinus after sinus formed, accompanied by severe pain. At the time of his admission, four of these fistulous tracks existed, all communicating with the os calcis; and when probed, it was found that a considerable extent of the cancellated structure of this bone was involved.

The usual operation was performed Oct. 2, 1869. The os calcis and astragalus were alike involved, and both were removed, no arteries required ligation; and the limb and foot were placed in a pasteboard splint. A very perfect recovery followed, both as regards motion in the new joint, and in the usefulness of the foot, which was shortened about one inch.

ART. XX.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1870. *Oct.* 10. *Cancer of Stomach, with Cheesy Deposits in Lungs, of later Formation.*—Dr. JAMES C. WILSON presented the specimens and furnished the following history:—

Margaret O'Brian, Irish, æt. 46, married; a domestic. Lost a brother and one sister by phthisis pulmonalis. No history of cancerous disease in her family. Her health was always good until April, 1869, from which time she dated the beginning of her illness. While at work as laundress, she was suddenly seized with violent dysenteric symptoms, frequent vomiting—the ejecta containing occasionally a little dark blood—and diarrhœa, the stools being small, dark, and containing bloody mucus. She had high fever and became very prostrate, and in a short time noticed œdema of feet and ankles. After a long illness, she improved somewhat, and was admitted to the Pennsylvania Hospital in October, 1869. At that time she had no vomiting, but frequent, copious discharges from the bowels; and a small, hard, movable, non-sensitive mass, about the size of an egg, was noticed in the epigastric region, but no other tumour was detected. Her menses ceased from the beginning of her illness. She remained in the hospital four months, and felt well enough at the time of her discharge to return to her work as a domestic. She continued, however, to be weak and miserable until her readmission, August 10, 1870, having had in the meanwhile continual diarrhœa and frequent slight œdema of the feet, with at least one attack of severe vomiting and purging, with fever, similar to that with which her sickness began.

On admission she was very pale and weak; her face pinched; colour anæmic and sallow; conjunctiva slightly cholæmic; tongue clean and glazed; there was frequent vomiting; bowels moved frequently and irregularly, the stools being large, watery, whitish, very offensive; pulse 80, feeble; urine about normal in quantity and appearance; it showed no albumen, no deposit on standing. There were no cardiac or pulmonary symptoms.

On palpation, a hard, movable, non-sensitive mass, the size of a fist, was felt in the epigastrium, slightly to the left of the median line.

Her condition remained much the same, with occasional brief amelioration, and the addition of slight pains at times, referred to epigastrium and to upper part of chest, until the middle of October, when she became much worse, rejected food, had profuse diarrhœa, sank rapidly, and died November 2d, of exhaustion.

Autopsy five hours after death.—Cancerous cachexia evident, if not marked; rigor mortis established; emaciation extreme; ankles slightly œdematous; absence of abdominal dropsy; firm, though not extensive, adhesions between the greater curvature of the stomach and the transverse colon. The stomach contained a quantity of dark, turbid fluid, resembling broken-down blood, and presented on its mucous surface a large, irregular, cancerous mass, of moderately firm consistence, occupying the pyloric extremity of the organ, and chiefly its greater curvature. The pylorus was not encroached upon to any considerable extent by this growth. The pancreas showed no cancer; the liver none. The latter viscus was large, highly anæmic, markedly fatty, and of a light creamy-brown colour. Throughout the right lung, and especially at its apex,

were numerous small, hard deposits; a few points were also found scattered through the left lung. There was no enlargement of either the mesenteric or bronchial glands. The other viscera were normal in appearance.

Dr. GEORGE PEPPER said this case had been under his constant observation during two terms of service of Dr. J. F. Meigs. During the past two months, and during the corresponding months of last year, there was a tumour in the epigastrium as large as an English walnut, but so entirely without pain or other symptom was it for a long time, that it was scarcely thought to have had anything to do with her disease. Finally, however, there developed the symptoms which proved its association; but throughout there was little or no pain, and, until the last, only occasional vomiting. The mass was always quite movable, situated to the left of the median line, and when she lay upon her right side, it would fall over into the right hypochondrium. Indeed, it seemed more like disease of the greater curvature of the stomach, or omentum, or large intestine.

The history of the disease dated back at least one year, and during the whole of that time she was failing steadily and progressively. The condition of the lung was not suspected during life. Dr. Pepper had never heard of her coughing. She certainly never complained of her chest, and at the examination on admission her lungs were pronounced healthy.

Dr. PARRY said that his experience would lead him to believe that there was often absence of pains in secondary cancer of the lung. This instance called to his mind two cases. A few days ago a woman died at the Philadelphia Hospital, having soft cancer of the uterus. It was supposed that she had trouble with her lungs, and after death several large cancerous masses were found in these organs. Here the symptoms of lung trouble were much less marked than he should have suspected. A second case of cancer of the uterus had also exhibited cancerous masses in both lungs, preceded by few symptoms. In both cases the so-called cancerous cachexia was profound.

Nov. 24. *Rachitis.*—Dr. PARRY presented the specimens and read the following history:—

John B., æt. 9 months, coloured, and an inmate of the Philadelphia Hospital. His mother was a very healthy woman, and had a full breast of milk. She gives a very imperfect history of her child's previous condition, but it appears that for two or three months before his death he suffered from indigestion, vomiting occasionally, and having attacks of slight diarrhœa, alternating with constipation. During this time he sweated profusely about the head and shoulders. For two weeks preceding his death he had a little cough, but he was not considered ill until November 10th, during the night of which he suddenly grew worse, and on the 11th he had fever, cough, dyspnœa, a frequent, weak pulse, and occasional vomiting. Physical examination revealed the existence of bronchitis.

The evidences of rachitis were extremely well marked; the head was large and square in outline; the sagittal suture was open, and the anterior fontanelle was extremely large, but not elevated; the frontal suture had not united, and the two halves of the bone were connected by a membrane about half an inch wide; this extended down to the root of

the nose, and was continuous with the anterior fontanelle above; there was no separation of the coronal and lambdoidal sutures; over the whole surface of the occipital bone cranio-tabic spots were easily detected; dentition had not commenced.

At the base of the thorax, on a line with the ensiform cartilage, was a transverse furrow; upon each side of the chest was a vertical depression following the articulation of the costal cartilages with the ribs; at the bottom of this furrow distinct "beading" of the articulation could be felt; the sternum was prominent; the lower extremities of the radius and ulna were slightly enlarged in both arms; the bones of lower extremities were not diseased.

On the 12th the child died of the bronchitis.

Autopsy fourteen hours after death.—Body not much emaciated; anterior fontanelle depressed; between the two halves of the frontal bone was a furrow as wide as the index finger; scalp normal; anterior fontanelle an inch and a half wide, and merged into the membrane of the separated frontal suture; the tissue closing the fontanelle was normal in appearance, and that uniting the two frontal and the two parietal bones could not be distinguished from it; lambdoidal and coronal sutures normal; in the occipital bone were twenty cranio-tabic spots, the largest about three-eighths of an inch long; parietal bones consisted of two portions, the protuberances of which were prominent, well ossified, hard and translucent, and an outer portion, which was thicker, softer, more succulent and opaque; temporal bones much thickened, softened, and very porous; pericranium over the diseased bones thicker than normal, and when stripped off it brought away minute portions of bone with it; inner surface of cranial bones nearly natural in appearance; nothing abnormal about the dura mater; brain large, firm, and completely filled the cranial cavity; no hydrocephalus whatever; a little venous congestion of the organ, but otherwise it was perfectly normal; costal cartilages depressed in front of the nodules; direction of ribs normal; external enlargement of the articulation of the ribs and costal cartilages not great, but in the inner surface of the thorax the beading was remarkably well developed; lungs presented the ordinary characters of acute bronchitis; abdominal organs all healthy; no albuminoid degeneration of any of them.

These specimens present some rather unusual features. I have had numerous opportunities of making post-mortem examinations of the bodies of rickety children, but in this skull the lesions of the disease are better developed than I have ever seen them before, and until now it had never been my fortune to meet with such a remarkable separation of the frontal suture. The most noteworthy feature of the case, however, is the entire absence of hydrocephalus, which, we know, is not common in conditions like those described. Ritter von Rittershain believes that in these cases the effusion of serum is the primary step in the process, and to it he ascribes the production of the open sutures. Here, however, is an instance in which the rachitic lesions of the skull are remarkably well developed, without an abnormal quantity of serum either at the base or in the ventricles of the brain. The case is extremely interesting in being free from any cerebral complications.

It is my opinion that the frequency of rickets in this country is much underestimated. Dr. Gee has asserted that 30.3 per cent. of all the sick children coming under his observation at the Children's Hospital in London suffer from this affection. Ritter states that his investigations in the

Medical Poliklinik at Prague have shown that 31 per cent. of all the children under five years of age there treated are rickety. So far as I am aware, no statistics in regard to the frequency of this disease in this country have been published. I have been for some time investigating this subject in the children's department of the Philadelphia Hospital, and I do not hesitate to assert that 25 per cent. of all the children between two months and four years old now in that institution are rickety.

Dr. JENKS was inclined to question the complete identity of this cranio-tabial process, as met in the skull, with rachitis. It was first described by Elsässer, whose observations are exceedingly valuable, and accurate to a wonderful degree; but his pathological descriptions are vague. Virchow has not hesitated to declare the identity of cranio-tabes with rickets.

In rickets, however, we have proliferation of the cartilage-cells and irregular calcareous deposit, whereas, in cases of this sort, the bone is slowly dissolved, the intercellular substance becomes granular, the salts disappear, and then a process of absorption ensues, so that you often get pictures under the microscope in which the bone-cell is preserved, and half projects from its cavity. Rittershain also doubts the complete identity of cranio-tabes with rickets, and distinguishes two forms, a general softening of the occiput, which he characterizes as rachitic, and a partial circumscribed absorption which cannot be accepted as an evidence of rachitis.

If portions of the bone surrounding these membranous spots be ground down, and treated with sulphuric acid, a good view can be obtained of the true bone-cells, which can be tinged with iodine or carmine. In no specimen that Dr. Jenks had examined could be found any evidence that the bone-cell itself participated in the process, nor did there appear to be an increased proliferation of the periosteal cells. No theory has been advanced which will explain the occurrence of this disease. Originally it was suggested that it was caused by the pressure of the brain upon those parts, from the fact that the child passes so much time in the supine position. The theory that it was due to excess of lactic acid in the blood has been abandoned. I was induced more particularly while studying the condition of encephalitis neonatorum to believe it due to cerebral venous congestion, the bony salts being dissolved by the excess of carbonic acid in the blood. The pulmonary embarrassment, so common in rachitis, may have something to do with the formation of this cranio-tabial condition.

Dr. PARRY said cases like this were not rare in the Philadelphia Hospital. He was not willing to accept Dr. Jenks's view, that they are the result of an interference with respiration. He has found them when there is no respiratory trouble. Respiratory disorders are, in many cases, a sequel of the disease or diathesis from which the patient suffers. The complication thus arising is often fatal, occurring often where the diameters of the chest are diminished by alteration in the direction of the ribs. Very frequently I have noticed this change in children who have never had any respiratory disease.

Dr. JENKS did not intend to limit the causation of these spots of cranio-tabes to respiratory troubles, but believed that anything which produces congestion of the head might be instrumental in developing them.

Dr. MITCHELL said this specimen reminded him of one he had seen many years ago, in the child of a Scotch gardener of his father, in which, during a period of decline, there appeared several soft spots on the skull,

about half an inch in diameter. A physician was called, who supposed them to be abscesses. He opened one, but no pus appeared Three months later the child died. There were eleven such perforations in the skull.

December 8. I. *Phthisis: Cavity at Apex of each Lung; Disseminated Miliary Tubercle and Cheesy Deposit.* II. *Phthisis: Cavities; Cheesy Deposit only.*—Dr. TYSON presented these two sets of lungs, with the following history:—

CASE I.—W. B., aged 19, a slipper-maker, temperate, was admitted to the Philadelphia Hospital Oct. 19, 1870. Is ignorant of causes of death of parents and five brothers and sisters. In winter of 1869–70 took cold from exposure while perspiring, since which has had cough, but has had purulent expectorations only during past three months. Recently has rapidly lost strength and flesh, and has had night-sweats with aphonia for past two weeks.

At admission was much emaciated; had aphonia and harassing cough, no sweats, but almost constant febrile movement, with daily exacerbations, and a temperature often as high as 105° in the axilla. Physical examination revealed equal dulness under each clavicle as far as second rib, but extended on left side as far as nipple; correspondingly were cavernous respiration and pectoriloquy. Posteriorly there were dulness, pectoriloquy, and cavernous respiration in supra and infra-scapular spaces.

The usual treatment was instituted, with imperfect results. Inhalations of morph. sulph. gr. ss, and pot. chlor. gr. xx to f℥j of water were, however, grateful.

The patient gradually sank, and died Nov. 30.

Post-mortem, twelve hours after death, exhibited, as to larynx, œdema of both arytenoid cartilages, more marked in the left. The interior of the larynx is the seat of almost continuous ulceration from the epiglottidean folds to below the true vocal cords, the right of the latter being completely eroded. Below these points is continuous follicular ulceration to the beginning of the trachea. The *trachea* itself, excepting anteriorly, is the seat of excavating ulceration as far as its bifurcation, more marked posteriorly, where the cartilages are absent.

The *lungs* were the seat of cavities, one in each apex, the larger in the left. But scattered throughout the remainder of both lungs were abundant cheesy deposits, between which were numerous transparent gray granulations of miliary tubercle. No pleurisy.

CASE II. was that of a miserable girl, aged about 25, who was admitted to the inebriates' ward of the Philadelphia Hospital late in September, with delirium tremens. She was treated with chloral, and recovered, but to become the victim of a rapid phthisis, which apparently beginning in solidification of the left apex, soon manifested all the evidence of cavities at the top of each lung. Treatment availed little, emaciation progressed to an extreme degree, and she died late in November, little more than two months after the first symptoms were observed. Post-mortem examination revealed extensive cavities in both lungs, and cheesy deposits occupying the calibre of the bronchial tubes of medium size, throughout each organ. No gray tubercle was anywhere present.

There are one or two points of clinico-pathological interest in connection with these cases.

In the first it is likely that the deposition of the miliary tubercle, in-

duced, perhaps, by the absorption of the chronic bronchial deposit, occurred at the date specified, two months before admission, and from this we date the rapid decline of the case, according in these respects with recent investigations upon this subject.

Case II., however, does not, at first sight, accord with what we should expect. Here was a case of chronic bronchial disease, of the form which is ordinarily amenable to treatment, or at least does not terminate very rapidly, running its course in little more than two months. This is not usual. But, when we consider the previous history of the patient was that of a common street drunkard, with vital powers at their lowest ebb, it is not unreasonable that the case should pursue such a speedy course.

December 22. *Ovarian and Uterine Tumours.*—Dr. PORTER presented the specimens, with the following history:—

Maria W., aged 60, a coloured cook, of large frame, and rather fat. She was the mother of five children, the youngest being now 23 years old. She never menstruated after the birth of the last child, although she had always been regular before. Soon after this she noticed that her abdomen was enlarging, but she never paid any particular attention to it as she was enjoying good health, and continued to work till the autumn of the present year, when she began to be troubled with shortness of breath and œdema of the lower extremities. This increased to such an extent that she was soon unable to work. On the 12th of October she was seen and examined by Dr. Washington L. Atlee, who has very kindly given me the following note of her condition at that time: "She has a fatty, protuberant, and rather pendulous abdomen, independent of the tumour. The tumour has troubled her for several years. When on her back, with the abdomen exposed, the abdomen is perfectly symmetrical in shape. By the hand, however, I can detect a hard, smooth, oblong, almost round tumour in the right side, occupying the right iliac and lumbar regions, and the right side of the umbilical region, extending just beyond the linea alba towards the left. It was capable of being moved freely in all directions. The uterus is central, much heavier than usual, is occupied by an intra-mural fibroid in the fundus. The sound enters $2\frac{1}{2}$ inches. The abdominal tumour can be moved in all directions without affecting the uterus." On the 17th of November she came under my care as a patient of the Philadelphia Dispensary, and I found her suffering, in addition to the abdominal symptoms, from considerable debility, with œdema of the abdomen and lower extremities, and great difficulty of breathing, so much so that she was unable to lie down except for a few minutes at a time. Her urine was scanty, high coloured, and contained albumen. She continued in very much the same condition until the 11th of December, when she suddenly became unconscious for about three hours. After this attack the prostration was much more marked, and she gradually sank, and died on the 19th of December.

Post-mortem examination twelve hours after death.—The abdomen and lower extremities were considerably enlarged and œdematous, pitting on pressure. On opening the abdominal cavity a quantity of serous fluid escaped, and the tumour was found occupying the position assigned to it by Dr. Atlee. The omentum was adherent at several points to the tumour, which was found to be attached to the left side of the uterus by a slender pedicle, about six inches long. The tumour contained about eight ounces of a thick yellowish creamy fluid, and a mass of hair glued

together by a thick sebaceous-like matter. On making a section of this mass, no traces of bones or teeth were found.

The cervix uteri was elongated. The probe passed easily to the fundus of the uterus, about four inches. At the fundus an exceedingly hard and almost round tumour, of about two inches in diameter, was found. On sawing through this tumour the outer coating was found to be of a bony consistence, the inner less dense, more like fibrous tissue.

A smaller tumour, about three-quarters of an inch in diameter, of bony consistence, was situated on the posterior wall of the uterus. A fourth, much smaller, of which no section was made, was found on the anterior wall of the uterus.

The right ovary and its appendages were normal.

Dr. JENKS said the usually accepted immunity which follows calcification of fibroid tumours is not so great as is commonly supposed. He had seen specimens in which, instead of remaining harmless, such a tumour had produced ulceration of the walls of the uterus, and had escaped into the cavity of the abdomen, or was evacuated externally. In one case mentioned by Virchow the tumour perforated the anterior wall of the uterus, and finally the anterior wall of the abdomen. In another case it was discharged by the rectum. These results seem to depend not so much upon the size of the tumour as upon its vascular connection. Where calcification has taken place we invariably find the tumour has been almost surrounded by a capsule of connective tissue.

Another curious fact is the change in the form of the uterus produced by these tumours. Numerous cases are reported in which the uterus has been severed in its continuity, separation generally taking place at the internal os uteri, being twisted off as the result of constant stretching, combined with accidental rotation on its axis.

Another point of interest is with regard to the supply of bloodvessels. The most varied statements exist on this point. Most authorities say the supply of blood is limited. While this is true in most instances, some fibroids are exceedingly vascular. Dr. Jenks had himself examined preparations of Prof. Wedl's, showing great vascularity, so great indeed as to render the tumours appropriately classed Myoma Telangiectodes (Virchow).

Dr. PACKARD said that the point last referred to by Dr. Jenks suggested the case from which he had presented a specimen for Dr. Getchell, at a meeting of the Society in June. The tumour was partly through the os uteri, and, by the efforts of Dr. Getchell and himself, by traction from below and pressure from above, was completely removed, not only without appearance of any severe vascular connection, but also without hemorrhage. The uterus returned promptly to its natural condition. He had never been able to satisfy himself how thus large a mass received its nourishment, without having vessels passing to it of sufficient size to give rise to hemorrhage after its removal, or even to be discoverable by inspection.

Ulcerative Endocarditis; Embolism of Kidneys.—Dr. WM. PEPPER presented the specimens, and read the following history:—

James Fullerton, æt. 30, by occupation a labourer, and in enjoyment of general good health, was admitted to the Philadelphia Hospital on Nov. 4, 1870. He had been engaged in lifting and lading heavy stones, and was conscious that he had overtaxed his strength. Some weeks before

admission, he was attacked with hoarseness and partial aphonia, and had cough with some mucous sputa. Continued to work for a week, but then suffered so much from dyspnœa that he had to stop. Cough continued, and became attended with hæmoptysis. Had no symptoms of rheumatism. On admission, mind clear, face anxious, skin sallow, body emaciated, no œdema. Respiration 56, frequent spasmodic cough, with hæmoptysis; lungs deeply congested. Pulse regular, soft, and small, 96 in minute. Throbbing of cervical vessels. Area of cardiac dulness increased; impulse extended, and accompanied by marked thrill. Loud, rather hoarse, double cardiac murmur. Marked præcordial pain and tenderness. Complains of intense headache. Urine dark, with abundant urates, and slightly albuminous.

Condition continued about the same, with gradually increasing congestion of lungs and failure of cardiac power. Four days before death pulse in right radial artery disappeared, evidently from embolism of the brachial artery. Death occurred Nov. 18, 1870.

At the post-mortem examination, 36 hours after death, in cool weather, body was found advanced in decomposition. The surface of the corpse was mapped out by intersecting livid lines, due to decomposition of blood in the superficial veins. The pericardium was distended with air, and contained f℥iv of bloody serum, without any traces of inflammation. The cavities of the heart were distended with air, being blown up like bladders. The blood was everywhere fluid, dark, frothy, and the vessels and surrounding tissues were deeply stained. The tissue of the heart was soft and flabby. The left cavities were moderately dilated, and the walls rather thin. The hydrostatic test showed competency of the mitral, tricuspid, and pulmonary artery valves, but free regurgitation through the aortic valves. One of the leaflets of this valve was very much thickened, and contained a considerable collection of friable granular cheesy matter. The endocardium covering this was almost entirely destroyed, and existed only as little islets of softened tissue, or as shreds hanging and floating loosely. The cheesy material was readily disintegrated, and, in fact, numerous minute fragments of it were found in the aorta and left ventricle. The other aortic leaflets were also seriously diseased; they were much discoloured, thickened, and so much softened that numerous rents and perforations had occurred. There were a few small patches of atheroma along the arch of the aorta. The right brachial artery was not examined. The *lungs* were very deeply engorged, but presented no apoplectic patches. *Liver* was soft and congested. *Spleen* enlarged, its tissue softened and dark, but with no embolic patches. *Kidneys* not enlarged, discoloured and softened, and each presented two embolic patches, one very minute, the other about $\frac{1}{3}''$ in diameter.

REVIEWS.

ART. XXI.—*Puerperal Eclampsia.*

1. *On the Nature and Origin of Epileptiform Convulsions, caused by Profuse Bleeding, and also those of True Epilepsy.* By ADOLF KUSSMAUL, M. D., Prof. of Medicine in the University of Heidelberg; and ADOLF TENNER, M. D. New Sydenham Society Publications. Translated by EDWARD BONNER, M. D., 1859.
2. *On the Diseases and Derangements of the Nervous System, &c.* By MARSHALL HALL, M. D., F. R. S. London, 1841.
3. *Researches principally relative to the Morbid and Curative Effects of Loss of Blood.* By MARSHALL HALL, M. D., F. R. S. Am. edition, 1830.
4. *Guy's Hospital Reports*, 1836, 1841, 1843.
5. *The Uræmic Convulsions of Pregnancy, Parturition, and Childbed.* By Dr. CARL R. BRAUN, Prof. of Midwifery, Vienna. Translated by J. Matthews Duncan, F. R. C. P. E. American edition, 1858.
6. *Qu'est ce que l'Albuminurie? Ou de son Analogie avec les Sécrétions Séreuses, Séro-plastiques, et les Hémorragies, &c.* Par le Dr. LÉON GERME. Paris, 1864.
7. *Albuminurie dans les Rapports avec l'Hémotose, l'Eclampsie des Femmes Enceintes, &c.* Par M. EDOUARD ROBIN. Paris, Premier Mémoire.
8. *Epilepsy, and other Affections of the Nervous System, which are marked by Tremor, Convulsion, and Spasm; their Pathology and Treatment.* By CHARLES BLAND RADCLIFFE, M. D. London, 1841.
9. *Parturition, and the Principles and Practice of Obstetrics.* By WM. TYLER SMITH, M. D., Lecturer on Obstetrics in the Hunterian School of Medicine, London. American edition, 1849.
10. *Course of Lectures on the Physiology and Pathology of the Central Nervous System.* By C. E. BROWN-SÉQUARD, M. D., F. R. S. Philadelphia, 1860.

IT is well known from experiment and observation that convulsive movements can be *directly* excited by causes affecting the central nervous masses or the trunks of the motor nerves; and *indirectly* by such as impress the terminations of the excitant nerves in the several organs of the body—which produce their effects through the instrumentality of reflex action.

To attribute exclusively the originating source of convulsions to the spinal marrow is not in accordance with the facts derived from anatomical investigation or physiological research. As the inaccuracy of such limitation will be clearly apparent when the causes of convulsive movements are discussed, it need only now be stated that the brain being regarded

as a prolongation of the spinal axis, built as it were upon it, automatic movements proceed from it as well as from the spinal axis. Motor structure, indeed, constitutes a portion of the brain itself; and were it not for this, the reflex movements connected with the senses could not be excited. It is, moreover, through the motor tract extending into the brain that the purposes of intelligence and volition are accomplished; and as unconsciousness and insensibility are the precursors and concomitants of convulsions, and, further, as muscles of the senses are involved in the attack, it must be admitted that this organ is deeply interested.

Systematic writers have arranged convulsions under three heads, *apoplectic*, *epileptic*, and *hysterical*, according to the form exhibited by them. In each variety the convulsive movements are the same, being general or partial, as certain nerves and muscles are involved; and when we reflect that the same nervous apparatus and the same muscles are interested in the occurrence of convulsions, that the mechanism to be set in operation by the existing cause is identical, it is evident that the varied manifestations implied by the divisions specified depend not upon the difference in the effective mechanism concerned, but upon the extent to which it is put into operation by the force of the impelling causes. The phenomena which are exhibited as the effects of convulsive disturbance, depend upon the constitutional physical peculiarities of the individual.

The first notice of the causes of convulsions to which we can refer is the following aphorism of Hippocrates:—

"Convulsions take place from repletion or depletion, and so it is with hiccup." To this statement of the "father of physic" is appended this comment by Dr. Adams, the translator: "I need scarcely remark that this is a most important fact both in therapeutics and prognostics. How important is it, for example, in puerperal convulsions? The whole treatment turns upon the question whether the convulsion be connected with plethora or inanition. It is evidently the same with hiccup."[1]

In the chapter of the "Works of Hippocrates" on the "Diseases of Females," which has been considered as not properly to be attributed to that author, but originating from some one of his pupils as a summary of the clinical views of the master upon the subject, and representing the knowledge of the period, there is a reference to the production of convulsions as the result of *hemorrhage after labour*. This fact proves a knowledge of such a cause of parturient convulsions. The regimen recommended was a sustaining one.[2] The doctrine, then, that convulsions are the result of exhaustion is as old as the earliest records of physic, and could not but be confirmed by the experience of subsequent ages. It was lost sight of, however, in the last century, until prominently set forth by Fontana. The doctrine that prevailed attributed convulsions to caustic salts, "the invisible points of which pricked the nerves and irritated the muscular fibre." In combating this hypothesis, the language of Fontana is the following:—

"Convulsions are not always the effect of stimulus which irritates; they come rather from this, that the equilibrium between antagonistic muscles is broken. Animals that are weak and languid, and which die from loss of blood,

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[1] The Genuine Works of Hippocrates, by Francis Adams, LL.D., Surgeon, London. Printed by the Sydenham Society, 1849, vol. ii. p. 758.

[2] Œuvres Complètes d'Hippocrates, &c., par E. Littré, à Paris, 1844, tome viii. p. 237.

perish in horrible convulsions, and nevertheless there are neither pointed nor irritating salts."[1]

The light in which the preceding statements, as to the condition of the system which conduces to the production of convulsions, are to be regarded, will be presently shown.

It has now been determined that convulsions may be produced by sufficiently potent disturbance of the motor tract of the nervous system, whether this be brought to bear *directly* upon it, or *indirectly* through reflex action. The former was termed by Dr. Marshall Hall *centric*, and the latter *eccentric*.

Mechanical impressions are capable of calling forth convulsive movements, as has been exhibited in the experiments of Kussmaul and Tenner, which were made with a view to determine the portion of the brain in which motor excitability resides. The whole of the cerebrum anterior to the thalami optici was removed, and the latter cut away, until the excitable parts were reached, which was apparent from a sudden convulsive motion of the animal (op. cit., Exp. 3, p. 73). Blows upon the back of the head, especially in children, or injury to the head in which a fragment of bone is driven upon the brain, will produce convulsions; in the latter case relief being afforded by the trephine or elevator. Morbid growths, exostoses, &c., within the cranium, have been shown to account for convulsive attacks occurring during life. A case is reported by Dr. Abercrombie in which the anterior fontanelle became very prominent, and pressure upon it produced convulsions.[2]

If centric convulsions can be produced within the cranium, they can equally occur from irritation of the spinal axis. Mr. Lawrence saw a case in which the brain was wanting in an acephalous child, and the medulla spinalis was continued for about an inch above the foramen magnum, forming a soft tumour. The child moved briskly at first, but remained quiet afterwards, except when the tumour was pressed, which produced general convulsions.[3] Another interesting case illustrating the same fact has been recorded by M. Ollivier.[4] In cases of spina bifida, when the tumour ruptures spontaneously, death rapidly ensues in the midst of general convulsions, which have been attributed to the introduction of air into the spinal canal. A case is given by Dr. Evans (Hall, op. cit., p. 144), in which pressure upon the tumour produced a croup-like convulsion. The writer has witnessed an attack of convulsions in a new-born child, from violence done to the spinal marrow in the delivery of the head, in a case of breech presentation. Animals at the slaughter-houses, struck down with the pole, are apt to have convulsions. From the preceding statements it is clear that such positive direct influences can be brought to bear upon the motor structures of the central nervous system as to influence the muscles and originate convulsions. The disturbance thus engendered has a *centric origin*.

Eccentric convulsions arise from inordinate excitation, or irritation, located at the peripheral termination, or in the course of an excitor nerve,

[1] Treatise on the Venom of the Viper, 1781, vol. i. p. 9.

[2] Pathological and Practical Researches on Diseases of the Brain, 4th ed. 1845, p. 57.

[3] Referred to by Dr. M. Hall.

[4] Traité de la Moelle Epinière, &c., par C. P. Ollivier d'Angers. Paris, 1827, tom. i. p. 162.

which may be lacerated or punctured, as happens in tetanus. Dr. Hall states that the principal causes of eccentric epilepsy are the presence of indigestible food in the stomach, of morbific matters in the intestinal canal, and uterine irritation (op. cit.). M. Herbinaux relates a case in which a ligature applied to a polypus in the uterus produced convulsions.[1] They may arise from foreign bodies in the alimentary canal, as coins, &c. Worms constitute an eccentric or centripetal cause, and dentition, through the branches of the trifacial, may be assumed as accounting in the same way for convulsive attacks in children. Reflex action is brought into operation in cases of eccentric convulsive movements.

We shall now consider the various alleged causes of puerperal convulsions, and endeavour to determine what influence they may exert, and likewise whether that influence be direct or indirect.

1. The condition first referred to by Hippocrates as the cause of convulsions is repletion, or, in other words, a fulness or *plethora in the vessels of the brain.* This doctrine has been extensively received by the profession, and has entailed the practice of depletion. To within a comparatively recent period the idea of determination of blood to the brain as a cause of the convulsions connected with pregnancy and labour was the leading one with systematic writers. In the article on "Eclampsia of Parturient Women," by M. Desormeaux (*Dictionnaire de Médecine*, 1835), will be found the following statement: "The determination of blood to the brain and the congestion that results from it are sometimes carried so far as to produce, even without predisposition, convulsive movements and loss of consciousness, coma, and other grave symptoms which constitute eclampsia." In the article "Convulsions" (*Ibid.*), similar views are expressed by M. Georget; they represent the doctrine of the French School of Medicine of that period.

If we examine the systematic authorities of the English School of Midwifery, the teaching will be found to be analogous. Smellie, Burns, and Merriman promulgated the doctrine of determination of blood to the head as the cause of puerperal convulsions, and subsequent writers have entertained the same opinion. Blundell, in his discussion of the subject, remarks: "Should you ask me in what manner convulsions are produced, I should reply, that the more probable immediate cause of them is a pressure on the brain and perhaps on the spinal marrow also."[2] He quotes Dr. Conquest's "Outlines" to the effect that "the proximate cause of puerperal convulsions is congestion of the vessels of the brain occurring under an irritable condition of the uterus." Dr. Rigby, although fully aware of the anæmic state of the system as conducive to convulsions, attributes epileptiform puerperal convulsions to cerebral congestion.[3] And Dr. Churchill, referring to the difficulty of forming any definite theory as to the cause, remarks: "Doubtless in some cases they are owing to the efforts made during labour-pains, by which an accumulation of blood takes place in the head."[4]

Upon turning to American writers, we find that no other idea but con-

[1] Observations, tom. ii., Ob. 19.

[2] The Principles and Practice of Obstetricy, as at present taught, by James Blundell, M. D., Prof. of Obstetricy, at Guy's Hospital, &c., Am. ed. 1834, p. 376.

[3] A System of Midwifery, by Edward Rigby, M. D., Am. ed. 1841, p 376.

[4] Theory and Practice of Midwifery, by Fleetwood Churchill, M. D., &c. Huston's Am. ed. 1843, p. 441.

gestion of the head is entertained as the cause of puerperal eclampsia. Dr. Dewees says:—

"Convulsions are all preceded by symptoms that denote their approach; in the epileptic species the premonitory symptoms may exist a number of days before convulsions show themselves, it is uniformly attended by a strong determination of blood to the head, producing engorgement of the vessels, hence headache of greater or less intensity, ringing of the ears, or temporary loss of vision, giddiness, &c., are always present before the convulsion shows itself."[1]

That Dr. Meigs entertained similar views may be judged from the following:—

"If the extreme violence with which during labour the blood rushes along the arteries of the encephalon be taken into consideration, it will be seen that the brain must, under such an excited circulation, be brought into a state of the highest nervous activity, and the functions of innervation become so considerably and irregularly augmented in consequence that the muscles of the body may readily fall into irregular convulsive movements." "A woman, therefore, in whom the pulse is uncommonly hard, frequent, and large, ought, *cæteris paribus*, to be deemed more obnoxious to the convulsion than a woman in a directly opposite state."[2]

It is seen from the above references that the occurrence of convulsions is attributed to an unnatural determination of blood to the head, which acts as a direct or positive cause, and under such circumstances the convulsions are *centric*

If determination of blood to the brain can produce convulsions, they must arise either from inordinate nutritive activity, created by the presence of more blood in the capillary and areolar tissue than is required for the usual functional energy of the organ, and which is employed in the creation of motor force to be expended on the muscles, or from irritation connected with pressure upon the motor tract through engorgement of the vessels.

Mr. Solly assumes the first of these propositions, when he states that sudden determination of blood to the brain must increase the secretion of nervous power, which, in a healthy state, conveys volition to the muscles, and is identical with electricity. "This excessive secretion is carried off by the motor nerves, like a discharge from an electric battery, and from its quantity and excess produces excessive action of the muscles."[3]

It may be asserted that when an organ is actively supplied with arterial blood, its functional energy is promoted so long as there is free egress to the fluid through the return vessels, and this applies to the brain, the operations of which may be quickened, but not abnormally. When, however, the balance of the circulation is lost in the vessels, and they become turgid with blood, there occur confusion of ideas, an interruption of the mental processes, an obtuseness of the senses, suspension of volition, and a tendency to coma. This condition may terminate in apoplexy, as in cases of hypertrophy of the heart. Muscular activity is not engendered under such

[1] A Compendious System of Midwifery, by William P. Dewees, M. D., Adjunct Prof. of Midwifery, University of Pennsylvania, 1828, p. 451. The same will be found in subsequent editions.

[2] Obstetrics, the Science and the Art, by Chas. D. Meigs, M. D., Prof. of Midwifery in Jefferson Medical College, &c., Phila., 1832. In the edition of 1869 Dr. Meigs reiterates, "So convinced am I that the disorder is one of the effects of the impetus sanguinis, and the cerebral and spinal hyperæmia, and a result rather of the quantitative than of a qualitative state of the blood," &c., p. 462.

[3] The Human Brain, its Structure, Physiology, and Diseases, by S. Solly, 2d ed. London, 1849, p. 590.—Am. ed., p. 430.

circumstances; or, as stated by Romberg, attacks of the kind are accompanied by weak convulsions. As a cause of convulsions the increase of arterial blood in the brain cannot be admitted. They do not arise from nutritive activity.

The question of pressure has been ably discussed by Dr. Burrows, who has shown not only its utility in connection with the activity of the brain, but that, when excessive, it may oppress that organ, and suspend its functional operations.[1] The ordinary result of congestion of the brain is a comatose state. The transition from coma to apoplexy is easily accomplished, and may be induced either by determination of blood to the head, or by retention of blood in the brain.[2] It is thus seen that pressure from congestion is not to be considered as a cause of convulsions, but, on the contrary, is productive of an opposite state, viz., that of coma. For reasons that are apparent, during pregnancy, and more especially during labour, the brain is liable to congestion. The expanding uterus produces pressure upon the vessels so as to embarrass the heart, while each pain of parturition is accompanied by forcible expiration, which suspends the free return of blood from the brain, and is shown in the distension of the veins of the neck and in the livid appearance of the face.

A circumstance that must be noticed as the result of the physical state existing during the pains of labour, with remora of the bloodvessels, is the nature of the blood itself. Retained venous blood in the brain is charged with carbonic acid, but as the congestion is associated with embarrassment to the respiration, more non-oxygenated blood is furnished to the heart, and forced into the circulation of the brain; irrespective of pressure, then, there is a further cause for soporific or comatose phenomena; a species of narcotism is engendered, and this is antagonistic to the existence of convulsive movements. Dr. Denman saw the fallacy of attributing convulsions to a fulness of the vessels of the head, for he thus expressed himself with reference to it: "This opinion applies to a cause very general indeed, and, if true, must have had its effects so generally as not to remain in doubt. But they (convulsions) sometimes first come on, or continue with equal violence after the birth of the child, when the presumed cause is removed."[3]

From the foregoing exposition it would appear that determination of blood to the head solely, affords no satisfactory explanation of the origin of convulsions, although it is the cause of the comatose and apoplectic symptoms that are frequently, in those of a plethoric habit, the concomitants of pregnancy and labour. When referring to the "apoplectic species," Dr. Rigby observes, that "Dr. Dewees has described a species of convulsion by the term apoplectic, but it is perhaps questionable how far he is correct in calling them puerperal convulsions; for from the cases that have come under our own notice, the disease has been nothing else than genuine apoplexy."[4]

It may be further assumed that determination of blood to the nerve-centres does not conduce to the production of that convulsive capability

[1] Disorders of the Cerebral Circulation, &c., On the Connection between Affections of the Brain and Diseases of the Heart, by George Burrows, M.D., &c., Am. ed., p. 48 et seq.

[2] Burrows, loc. cit.

[3] An Introduction to the Practice of Midwifery, by Thomas Denman, M.D., Francis' edition, 1821, p. 522.

[4] Op. cit., p. 387.

which may lead to violent manifestation, when called into active operation under reflex action excited by the uterus, by the bowels and other organs, and by the various sources of nervous disturbance in the stages of delivery.

2. Let us now pass to the second statement of Hippocrates, that *convulsions are produced by depletion*, and endeavour to determine how far this is supported by facts derived from observation and experiment.

Among the "morbid effects" of the loss of blood, which have been so prominently set forth by Dr. Marshall Hall, is the occurrence of convulsions induced by the injudicious abstraction of it by the physician.[1]

The writer has seen convulsions follow the abstraction of blood from the arm, in a case of severe headache. This accident has been noticed by Mr. Travers.[2] Hemorrhage is not an infrequent attendant on parturition, either before or after delivery. In such cases syncope is not unusual, and where death occurs, it is from complete exhaustion of the vital operations of the heart and brain. When speaking of the result of hemorrhage, Dr. Rigby informs us that the alterations which take place in the state of the brain and nervous system vary in different individuals; "in some there is strabismus; in others, temporary mania, or at least delirium; and in more unfavourable cases, *even convulsions*. These last are especially formidable, and not only show that the system has been severely affected by the loss of blood, but are apt, from their violence, to extinguish the little spark of life which is left; or, in other words, to be followed by sudden death."[3] A number of practitioners have recorded such cases, as Dr. Lever,[4] Dr. Marshall Hall,[5] and Dr. A. C. Baudelocque.[6] With respect to the production of convulsions by loss of blood in animals, it is stated by Kussmaul and Tenner that more than twenty rabbits, killed by loss of blood, died in general convulsions like those observed in epilepsy. The convulsions were similar to those produced by loss of blood in other animals.[7]

3. In man the *stoppage of the circulation in the brain* may produce convulsions. Although the operation of tying the carotid artery is most frequently attended with stupor and paralysis, yet instances are on record in which this has been followed by convulsions. Such cases have been met with by Vincent,[8] Abernethy,[9] Zeis,[10] Magendie,[11] and Kuhl.[12] For an exposition of these cases reference may be made to a paper by Dr. Norman Chevers.[13] That convulsions can be produced by depriving the brain of blood, by means of compression or ligatures, is a fact familiar to experimenters. The experiment of Sir Astley Cooper, performed in 1811, is well known. He tied both the carotid arteries in a dog, and compressed the vertebral arteries, when insensibility and swooning, with convulsions, occurred.[14] The experiment was repeated by Panum with like results.

[1] Op. cit., p. 19.
[2] On Constitutional Irritation, p. 501.
[3] Op. cit., p. 339.
[4] Dr. John Lever, A Case of Hemorrhage previous to Delivery, Guy's Hospital Reports, 1841, p. 68.
[5] On Loss of Blood, op. cit., p. 20.
[6] Traité des Hémorragies intèrnes de l'Uterus, pp. 51, 102, 169, 212.
[7] Op. cit., p. 9.
[8] Medico-Chirurgical Trans., vol. xx.
[9] Surgical Observations, p. 193.
[10] Dr. Zeis, of Dresden, British and Foreign Med. Review, vol. vi. p. 234.
[11] Journal de Physiologie.
[12] Kuhl, of Leipsic, Med. Gazette, vol. xvi. p. 816.
[13] Remarks upon the Effects of Obliteration of the Carotid Arteries upon the Cerebral Circulation, by Norman Chevers, M. D., London Med. Gaz., Oct. 1845.
[14] Guy's Hospital Reports, vol. i. 1836. The experiment was also performed by him on rabbits.

Experiments of a similar character were performed by Kussmaul and Tenner on rabbits, with the view of determining the agency of stoppage of blood from the brain in the production of epilepsy, and they found that general convulsions usually followed in from eight to eighteen seconds after the complete withdrawal of arterial blood.[1] They state that twice, within their experience, after tying one carotid, have convulsions been observed on the side of the application of the ligature, attended with paralysis of the opposite side.

In man the interruption of the circulation in the brain by compression of the carotids may produce convulsions. In two subjects (reported by Kussmaul and Tenner) of weak intellect, and moderately anæmic, in whom the compression was continued, a choking sensation, attended with vomiting and general convulsions came on, which passed off when the compression was withdrawn.

An opposite opinion has been entertained by such eminent men as Monroe, Abercrombie, and Dr. Clutterbuck, who maintained "that no *additional quantity of blood can be admitted into the vessels of the brain*, the cavity of the skull being already completely filled by its contents;" and, on the other hand, that under no circumstance "*can the quantity of blood within the vessels be diminished.*"[2] Bleeding, therefore, cannot lessen the amount of blood in the brain. This doctrine, which seemed to be sustained by the experiments of Dr. Kellie,[3] has been proved to be without foundation by the investigations of Donders[4] and Burrows, and fully refuted by the researches of Kussmaul and Tenner.[5]

In the experiments of Dr. Burrows, when the death of a rabbit occurred with convulsions, from hemorrhage, the membranes of the brain were found pallid, and scarcely the trace of a bloodvessel was to be found on its surface.[6] After death from the application of ligatures to the arteries of the brain, Kussmaul and Tenner found, in every instance, the substance of the brain, as well as of the medulla oblongata and the upper part of the spinal cord, deprived of blood, the cut surfaces without blood-spots, and the arteries of the cranium empty, some large arteries at the base of the brain excepted, which contained a slight quantity of blood. The quantity of blood in the veins, however, varied considerably.

4. *The whole motor nervous tract is involved in the production of convulsions.* Dr. Marshall Hall attributed *the production of convulsions to the spinal marrow;* his language is as follows: "The undue or unduly diminished quantity of blood in the medulla induces spasm or paralysis." "The cause of this convulsion is the anæmious condition, not of the brain, but of the spinal marrow." His belief was founded on the fact that when the spinal marrow in the sheep is divided, and the animal is then bled to death, violent convulsions occur, "an event which could depend upon the anæmious state of the spinal marrow alone, the influence of the brain having been removed."[7]

A more satisfactory explanation of the true seat of convulsions has been attained by the experiments of Kussmaul and Tenner. First, they tied both subclavian arteries at the origin, so that the *blood was conveyed to the brain by the carotids.* Then the arch of the aorta was tied

[1] Op. cit., p. 7.
[2] Article "Cerebral Apoplexy" in the Cyclopædia of Practical Medicine.
[3] Medico-Chirurgical Trans. of Edinburgh, vol i.
[4] Schmidt's Jahrbücher, 1851, vol. lxix.
[5] Op. cit. [6] Op. cit. [7] Op. cit., p. 96.

with a thread, so that the blood was cut off from the spinal cord. In most of the animals (ten) paralysis of the hinder part of the body came on *without any convulsions;* in three there were slight tremblings, but peculiar movements were regularly observed, like those of chorea, in the fore-legs. Death occurred from asphyxia, with cyanosis, in consequence of paralysis of the respiratory muscles.

The spinal cord was void of blood in the lumbar, dorsal, and cervical portions; but in the upper third of the cervical vertebræ the vessels were fuller, the quantity increasing in the direction of the medulla oblongata.

These experiments were conclusive with respect to the fact that the abstraction of blood from the spinal cord does not produce convulsions. *When, however, the carotids were closed by compression, within a few seconds after the ligation of the aorta and after the production of paralysis of the hind-legs, convulsions occurred.*

When by the compression of the aorta, the paralysis of the muscles furnished with nerves from the spinal marrow was *firmly* established from want of nutrition in the cord, neither compression of the carotids nor hemorrhage produced convulsions.[1]

A repetition of the experiment of Dr. Hall was effected by dividing the spinal marrow of a rabbit above the third cervical vertebra; very little blood was lost; while the spinal cord was being cut, violent clonic spasms were produced, and the respiration became slow and laboured. On bleeding to death no convulsions occurred.

A second experiment was made by dividing the spinal cord at the fourth dorsal vertebra. While the operation was being performed the animal shook violently, and the convulsions of the hind legs continued for some seconds afterwards; the animal was then loosened, and the hind part of the body was completely paralyzed. Death from hemorrhage was produced by opening the innominata, and *violent convulsions of the fore part of the body ensued, with drawing of the head backwards; the hind parts of the body remaining unaffected and paralyzed.*

The conclusion is therefore warranted "that the source of general convulsions in excessive hemorrhage is, without any doubt, to be sought within the cranium, and the spinal cord serves only as a conductor of the motor impulse proceeding from the brain."[2]

With the view of elucidating the question as to what portion of the brain is concerned in the manifestation of convulsions, Kussmaul and Tenner removed the cerebral hemispheres, together with the corpus callosum, the fornix and anterior commissure, the cornua ammonis, the corpora striata, the pituitary gland, with the greater part of the tuber cinereum and the pineal gland, before hemorrhage and compression were carried into operation, and found that convulsions occurred as if the brain had remained intact. From these experiments the conclusion was drawn that *convulsions* do not *proceed* from the cerebrum, properly so called, but from the motor centres situated behind the thalami optici; in other words, *from the "excitable," and not from the "non-excitable" portions of the brain.*

Removal of the cerebrum produces paralysis of voluntary motion, and by the removal of the cerebellum co-ordinating power is damaged, but then all the motor mechanism can be brought into operation by loss of blood, by ligation of the vessels, or by direct irritation of the crura, and reflex

[1] Op. cit., p. 56 *et seq.* [2] Op. cit.

action can thus be engendered. The removal of the cerebrum has only the effect of diminishing convulsive movements under hemorrhage. Dr. Brown-Séquard came to a similar conclusion, that the seat of convulsions is in the upper part of the spinal cord—in the medulla oblongata and pons Varolii, where the roots of the first motor nerves have their origin.[1] The error of Dr. Hall consisted in not recognizing the extension of the motor centre into the brain as the starting-point of convulsive movements. The term that has been adopted of "brain convulsions" must be admitted to be correct.

5. *Fainting, or loss of consciousness from deprivation of blood in the brain*, precedes convulsive attacks, but is not necessarily or even ordinarily accompanied by them. It was the opinion of Dr. Burrows that "syncope is occasioned by insufficient vascular pressure on the brain, and not from the inadequate quantity of blood supplied to the brain or its vessels, as is commonly supposed."[2] The experiments which have been detailed show that the upper portion of the brain can be removed without convulsions, unless hemorrhage or ligature of the arteries withdraw the circulation from the motor tract. If the abstraction of pressure were the cause of convulsions, they would have occurred from this abstraction when the superior portions of the brain were removed, and we may conclude from the experiments detailed that the occurrence of *convulsions is connected with, and results from, anæmia of the brain, irrespective of the removal of the pressure in the vessels.* There can be no doubt of a modification of the nutritive movements, whether vital or chemical, in the central motor portion as well as in the entire brain, either from hemorrhage or from the application of ligatures to the arteries.

The fact that presents itself prominently to view is, that *a state of debility is highly conducive to convulsive attacks*, and this is extended over a wide field of pathological observation. The debility is connected with an anæmic state of the system, in which the nervous centres especially feel the want of full, healthy, nutritive supply, and are prone to manifestations of irregularity or perturbation in their functional operations. The term "anæmic convulsions" is employed by Dr. Rigby when they occur in pregnancy in connection with an anæmic condition. There is something—a condition it may be called—connected with the "excitable motor tract" of the nervous system, originating in anæmia, which has been recognized as conducive to the generation of convulsive movements, and requiring only the appropriate influences to bring it into activity. This has been termed by authors irritability, inordinate excitability, and by Wigand "convulsibility." It is most likely to be engendered among the inhabitants of large cities, and to exist in individuals whose lives are maintained at a lower degree of organic force than natural, either from inordinate labour, with scarcity of food, from early indulgence in the pleasures of society, amounting to dissipation, or from having inherited a feeble nervous constitution or a strumous diathesis.[3]

6. The existence of *dropsy* in connection with puerperal convulsions was noticed by Dr. Hamilton, of Edinburgh, in 1800.[4] It soon after attracted the attention of Demarret in France,[5] and other European prac-

[1] Researches on Epilepsy, etc., Boston, 1857, p. 63 et seq.
[2] Op. cit. [3] Rigby, loc. cit.
[4] Duncan's Annals of Medicine, Edinburgh, vol v., and Practical Observations.
[5] Recueil Périodique de la Société de Médecine, tome ix. 1801–2.

titioners.[1] The first definite notice in this country of the association between dropsy and convulsions was published by Dr. Norman Lyman, of Connecticut, in 1824.[2] This communication is remarkable from the circumstance that in it he forcibly insisted upon the importance of a symptom which is now fully appreciated, and regarded as indicative of those pathological conditions of the system which are closely associated with the causation of convulsions. In speaking of this symptom, he says:—

"I have mentioned the dropsy of pregnancy as a precursory symptom of puerperal convulsions. It is to be understood that when I speak of it as such, I do not mean by it that swelling of the feet which so often takes place during utero-gestation, but a general œdema, accompanied most commonly with diminished secretion of urine."[3]

It is singular that Dr. Lyman did not extend his observations to the urine, and determine the existence of albumen in it in these cases, especially as Dr. Blackall's work on Dropsy was published in this country in 1820. Still the information given in the paper of Dr. Lyman was germinal, as from it have sprung, by the researches of subsequent investigators, most important results, throwing light upon the condition of the system in which convulsions are prone to occur.

7. Although mentioned by previous writers, as Coterninus, Darwin, and Fordyce, the presence of *albumen in the urine* was first practically referred to by Cruikshank[4] and Dr. Blackall.[5] It was called *serous urine* by the former. It is not necessary to the purposes of the present review to trace the history of investigations which have so clearly developed the connection between dropsy and the existence of albumen in the urine; nor is it important to specify the alterations of renal structure which first were indicated by Dr. Bright, and gave name to the affection ("*Bright's disease*"), as the pathological metamorphosis connected with albuminous urine has been found by subsequent inquirers to include more numerous forms and characters than in the first instance were specified.[6] It is only essential to set forth conspicuously the fact that while women in a state of pregnancy are as liable as other subjects to all the forms of renal disease described, there is a source of albuminuria peculiar to them, which is the pressure of the womb on the return vessels of the kidneys, by which congestion in them is maintained, and a consequent straining off of the albuminous element of the blood. Mr. Robinson has shown that causes which induce congestion of the kidneys by preventing the return of blood through their veins, as abdominal tumours, &c., will produce renal congestion and albuminous urine.[7] Such origin of albuminous urine in pregnant women

[1] It was noticed by Burns, op. cit., p. 197.

[2] The New England Journal of Medicine and Surgery, Oct. 1824, vol. xiii.

[3] Loc. cit.

[4] Appendix to Rollo on Diabetes.

[5] Observations on the Nature and Cure of Dropsies, and particularly on the Presence of the Coagulable Part of the Blood in Dropsical Urine, by Robert Blackall, M.D., Am. ed. 1820, from 3d Lond. ed.

[6] We may refer to the treatise "On the Pathology and Treatment of Albuminuria," by William H. Dickinson, M. D., Am. ed. 1868; to "A Practical Treatise on Bright's Disease of the Kidney," by J. Grainger Stewart, M. D., F. R. S., &c., Am. ed. 1868; also the work of Dr. Braun, of Vienna.

[7] By tying the aorta below the renal arteries and extirpating one of the kidneys, the pressure of blood upon the other produced albuminous urine. Robinson and Mayer found the same effect from tying the emulgent veins of the kidneys. (See Lehmann's Physiological Chemistry, Lond. ed. vol. ii. p. 423; also Gerne.)

has been particularized by Dr. Lever.[1] Frerichs has often found the œdema developed already in the third month of pregnancy, although far more frequently it is observed in the last four months; often, however, without attracting attention, as the less obvious features of the morbus Brightii are apt to be overlooked. The more the pregnancy advances the more the albumen in the urine increases, but it disappears quickly after labour, sometimes within a few days, unless the exudation process in the kidney makes further progress, and assumes the condition of chronic Bright's disease.[2] In commenting on the cause of albuminous urine, Dr. Leon Germe remarks, "that one would not be obliged to admit it, had it not been demonstrated by Dr. Brown-Séquard, who made a woman who was labouring under albuminuria, connected with pregnancy, incline forward, thus assuming a position which relieved the renal veins of compression, and found that there was cessation, for the time, of albumen in the urine."[3]

In 1836 Dr. Bright reported five cases of convulsions in association with the granulated state of the kidneys.[4] In 1843 Dr. Lever published fourteen cases of puerperal convulsions, under the name of "Anæmic Convulsions," in nine of which albuminous urine was present. The occurrence of the first case, where this feature presented, led him to further examine into the connection between convulsions and albuminuria, and he states that he carefully examined the urine in every subsequent case that came under his observation, both in the lying-in charity of Guy's Hospital and in private practice, and in every case but one the urine was found to be albuminous at the time of the convulsions.[5] He further investigated the condition of the urine in upwards of fifty women from whom the secretion had been drawn during labour by the catheter, and the result was that in no cases did he detect albumen except in those in which there had been convulsions, or in which the precursory symptoms presented themselves.[6]

At the period Dr. Lever was pursuing his researches, Dr. Simpson, of Edinburgh, was engaged in similar observations, and taught, as he states, in his lectures delivered in 1840–41, that patients attacked with puerperal convulsions had almost invariably albuminous urine, and some accompanying or rather preceding dropsical complication, and hence probably granular renal disease. In 1843 he published a paper upon the subject, and again presented his views in 1852.[7] These observations of Lever and Simpson have been corroborated by those of subsequent investigators in Europe and America. Professor Braun, of Vienna, referring to "the coincidence of eclampsia and albuminuria," remarks that this has opened a new path to the knowledge of this most dangerous disease; so that the eclamptic convulsions of women during pregnancy must be considered to

[1] Cases of Puerperal Convulsions, with Remarks, by John C. Lever, M. D. Guy's Hospital Reports, Oct. 1843.

[2] The Uræmic Convulsions of Pregnancy, Parturition and Childbed, by Dr. Carl Braun, Professor of Midwifery, Vienna; translated by J. Matthews Duncan, F. R. C. P. E., Am. ed., p. 30.

[3] Qu'est ce que l'Albuminurie? Ou de son Analogie avec les Sécrétions Séreuses, Séro-plastiques, et les Hémorragies, &c., par le Dr. Léon Germe. Paris, 1864, p. 26.

[4] Cases and Observations Illustrative of Renal Disease, Accompanied with the Secretion of Albuminous Urine; Guy's Hospital Reports, vol. i. 1836.

[5] The presence of albumen in the urine was overlooked in the first five cases.

[6] Loc. cit.

[7] Edinburgh Monthly Journal of Science, 1843 and 1852.

be identical with the fits of adults in general that are produced by uræmia in the course of Bright's disease.[1]

8. From the testimony given, both albumen in the urine and dropsy are the attendants upon or precursors of convulsions; but either singly or together they do not explain the perturbation of the nervous system, and it is necessary to examine these facts in connection with others with which they are closely associated. *The condition of the blood connected with these manifestations of disease* of the system must be inquired into, and the influence this condition may have over nervous operations must be appreciated.

The first circumstance to be noticed in albuminuria is the excessive quantity of water in the blood, and this entails a diminution of the solid constituents or nutritive materials. Christison found the serum of the blood turbid, and when shaken with ether it afforded a small quantity of fat. The specific gravity of the serum sank to 1020 or 1019, healthy serum being 1028 to 1030. In the 13 cases of analysis of the blood by him the water varied from 808.3 to 887.0, against 775.7 in healthy blood; and the solid constituents varied from 113.0 to 191.7, against 224.3 in the healthy. The solid constituents of the serum were reduced from 100–102 in the thousand to 68–64, and even to 61. He informs us:—

"The reduction, as far as I may judge from some not very careful trials, would seem to affect equally the albuminous and the saline contents. It occurs only when there is an abundant discharge of albumen with the urine, and then invariably. On account of the loss of albumen, the serum coagulates loosely when heated."[2]

Similar observations were made by Simon, who states, after presenting an analysis of Dr. Christison's researches:—

"These observations entirely coincide with my own, as far as regards the decreased quantity of solid constituents, the small amount of fluid corpuscles as the disease advances, and presence of urea in the blood."[3]

Andral and Gavarret present the following comparative examination of the blood:—[4]

	Healthy blood.	Blood in albuminuria.
Water	790	837.1
Fibrin	3	2.7
Red globules	127	91.8
Albumen	80	68.4

Dr. Rees has analyzed the blood in a number of cases; the results are presented thus:—[5]

1. Sp. gr. of the serum, 1015.

	Per 1000.
Albumen	46.980
Urea	0.209

[1] Op. cit., p. 29.

[2] On Granular Degeneration of the Kidneys, &c., by Robert Christison, M.D., &c., Edin. 1839.

[3] Animal Chemistry, with reference to the Physiology and Pathology of Man, by Dr. J. Franz Simon. Translated by George E. Day, M.A., &c., Amer. ed. 1846, p. 265.

[4] Annales de Chimie et de Physique, tome lxv.

[5] Guy's Hospital Reports for 1840.

2. Sp. gr. of serum, 1025.

Water	904.20
Albumen	65.00
Extractive and salts	30.30
Urea	0.5

3. Sp. gr. of serum, 1029.

Water	896.6
Albumen	81.6
Extractive and salts	21.3
Urea	0.5

In Guy's Hospital Reports for 1843 will be found a second series of analyses by Dr. Rees.

1. Sp. gr. Serum	1031.	Urea	0.54
2. " "	1023.	"	0.5
3. " "	1010.25	"	1.25

In commenting on his results, Dr. Rees makes the following observation:—

"The diseased conditions of the blood noticed in the table may, however, I think, well be considered the cause of the train of secondary symptoms attendant on morbus Brightii; and the first morbid condition induced may be (as has been rendered more than probable by the late ingenious researches of Mr. Robinson) simply a congested state of the kidneys, a mechanical derangement of the circulation, giving rise to a filtration of the albuminous matters of the blood into the urine—*a drain upon the system, which, by impoverishing* the vital fluid, may in its turn make the blood the cause of further symptoms, such as would never have been developed had not the primary disease been manifest."[1]

9. A *great dissimilarity* is presented in the *composition of the urine in this disease,* depending on a variety of circumstances, such as the stage of the disease, the constitutional condition of the patient, the amount of fluid passed, &c. The changes, therefore, that take place are far from uniform. The modifications are due, first, to the presence of new elements in the urine; secondly, to the change of proportion in those that normally exist.[2]

The urine is "anæmic;" its sp. gr. varies from 1005–1006 to 1014–1016; it is pale, clear, and slightly greenish; it may be acid or alkaline.[3] The presence of albumen is a general fact, and its proportions vary according to the individual, the period and degree of the disease, and often from day to day. Becquerel states that, compared with the amount of urine in twenty-four hours, he has observed it vary from $\frac{2}{1000}$–$\frac{3}{1000}$ to $\frac{10}{1000}$–$\frac{11}{1000}$. In a case of which an analysis has been given by Simon, there were $\frac{15}{1000}$ parts. In the table of Becquerel this irregularity is most clearly exhibited.[4]

In a case of convulsions sixteen hours after labour, Dr. Dickinson found the albumen in the urine to be one-sixth of the solid constituents.

With respect to *urea,* Simon found that this principle amounted on an average to about one-third or less of the organic constituents (exclusive of

[1] Observations on the Blood, with reference to its peculiar condition in Morbus Brightii, by George Owen Rees, M.D., F.R.S., Guy's Hospital Reports, April, 1843.

[2] Séméiotique des Urines, ou Traité des Alterations de l'Urine dans les Maladies, &c., par Alfred Becquerel, M.D., Paris, 1841.

[3] Simon, Becquerel. [4] Op. cit.

albumen); whereas in healthy urine it constitutes one-half.[1] Dickinson has observed it as low as $\frac{1}{1000}$.

In two cases of puerperal convulsions, attended with albuminuria, we have found the amount of urea in the urine to accord with the statement of Simon. It was reduced by one-third of the normal amount.

10. Having presented the preceding facts with respect to the blood and urine in albuminuria, derived from the highest authorities, we must consider them with respect to the light they throw upon the production of convulsions. When the demonstration was made that parturient women attacked with convulsions laboured under albuminuria, the assumption gained ready credence that, as there was a diminution of urea in the urine in that disease, *the retention of urea in the blood was the cause of convulsive attacks*, and hence the terms adopted of "uræmic intoxication" and "uræmic convulsions."

Before a physical cause can be assigned for the production of an effect, it must be proved positively to exist, and its uniformity of action carefully determined. It must be closely examined in all its relations, so far as observation and experiment can be applied to it.

The first question to be considered is, does urea uniformly exist in the blood in albuminuria, and if so, is it in sufficient quantity to produce the effects that have been attributed to it? The statement has been made by Bostock, Christison, Simon, and Rees that they recognized the existence of urea in the blood of persons labouring under albuminuria; careful experiments referred to by Becquerel do not, however, confirm the uniformity of its existence. He states:—

"Seven analyses have been made with greatest care to determine if the blood contains urea. Two were made by M. Lecannu, three by M. Quevenne, and two by myself. In each of these cases there was not found the least trace of urea; but, on the contrary, M. Quevenne found it in blood furnished by me, and obtained from a woman labouring under disease of the heart in its last stages of dropsy. The kidneys did not present any alteration upon autopsy, and the urine did not contain albumen."[2]

It is thus seen that the presence of urea in the blood in any considerable quantity is far from being an established fact in all cases of albuminuria. It can be shown, however, that urea can exist in the blood without the occurrence of convulsions. Prevost Dumas removed the kidneys from dogs and cats; no effect was manifested before the third day; vomiting and fever set in, and the animals died in a *state of depression*. Examination of the blood showed a considerable quantity of urea in it.[3]

Segalas found urea in notable quantity in the blood of a dog, bled sixteen hours after extirpation of the kidneys, but did not find it five days after, when one kidney only had been removed.[4]

By Vauquelin and Segalas ten grains of urea were injected into the vessels with half an ounce of water, but there were no symptoms manifested. When forty-two grains were injected, with two ounces of water, no sensible effects were immediately produced, other than frequent and abundant discharges of urine. No urea was detected in the blood. The same results followed the injection of a drachm, with the exception of a slight

[1] Op. cit., p. 473.

[2] Recherches sur la Composition du Sang dans l'Etat de Santé et dans l'Etat de Maladie, par A. Becquerel et A. Rodier, Paris, 1844, p. 518.

[3] Annales de Chimie et de Physique, 1843.

[4] Journal de Physiologie Experimentale et Pathologique, par F. Magendie, tome ii. 1822, p. 356.

disturbance of respiration and circulation, attributed to the sudden introduction of the fluid.[1] He regarded urea as diuretic. In a note to his paper (in the *Journ. de Phys., loc. cit.*) M. Segalas makes the following statement:—

"I may add, that the effects in animals consequent on the injection of urea into the veins having determined M. Fouquier to try this substance on man, we have administered it together, in gradually increasing doses, and the facts that we have collected so far are such as to confirm our ideas upon the diuretic action, and, further, upon the *innocent operation* of the new medicine."

M. Gallois threw five grains of urea into the stomachs of rabbits daily for three days. He found that in thirty to forty minutes it passed into the urine, and ceased to be excreted in from sixty to seventy hours.[2]

Dr. Tanner employed urea as a diuretic, and he remarks:—

"It is unnecessary to resort to experiments to prove that urea medicinally administered does not exert any deleterious or poisonous agency upon the system, because this has been done by Dr. Todd."

"In the human subject, a copious diuresis has been the only effect produced in many of the cases in which I have employed it; nor has it given rise to any unpleasant symptoms whatever. The ordinary dose on its being first used is ten grains every six hours, dissolved in water flavoured with syrup; as its effects decrease the dose may be augmented to a scruple or more."[3]

Dr. Hammond repeated the experiment of throwing urea into the blood of an animal. Sixty grains of urea, diluted with four ounces of water, were injected into the jugular vein of a large dog. After some slight disturbance the dog went to sleep and awoke in about two hours perfectly well. He then passed a large quantity of urine. The quantity of urea in the urine during the twenty-four hours following the injection was 53 to 54 grains more than during the twenty-four hours preceding.

In a second experiment 60 grains of urea, with 115 grains of vesical mucus, in four ounces of water, were injected, the result being the same. The animal urinated very freely, and 18.65 grains of urea more than the amount injected were discharged in twenty-four hours.[4]

Frerichs, as had previously been done by Bichat, Courten, and Gaspard, repeatedly injected from 20 to 40 grammes of filtered human urine, sometimes with the addition of urea, without any ill-effects resulting. He refers to cases reported by Drs. Bright, Christison, and Rees, in which urea was obtained from the blood, the patient at the same time being free from all nervous symptoms, and cites the case of a man labouring under granular degeneration of the kidneys, who, in consequence of pericarditis, was bled, the blood containing more urea than he had ever seen in that fluid; the patient died of pericarditis, without having manifested any symptoms of uræmia.[5]

When urea is used in very large quantities a toxic impression follows. M. Gallois administered 20 grammes (over 300 grains) to five rabbits, the weight of which varied from 1500 to 2000 grammes; the symptoms produced were accelerated respiration, weakness of the members, starts, general convulsions, and death.[6]

[1] Loc. citat. [2] Comptes Rendus, Avril 6, 1857; Chem. Gaz., July, 1857.
[3] Medical Times and Gazette, May 8, 1852.
[4] American Med. and Chirurg. Review, Philadelphia, March, 1838.
[5] Braithwaite's Retrospect, xxv., from British and Foreign Medico-Chirurg. Review.
[6] Comptes Rendus, loc. cit.

If urine in large quantity be substituted for urea, its effects are fatal. Segalas and Vauquelin threw three fluidounces of it into the jugular vein of a dog after he had been bled. The blood in the heart and vessels was clotted, and death appeared to be produced by this cause. When an ounce of urine was injected, chronic fever attended with agitation, palpitations, and disturbance of respiration following; autopsy showed inflammation of the lungs and clotted blood or polypi in the heart.

Frerichs performed the experiment of injecting from thirty to forty-six grains of urea into the veins of animals after their kidneys had been removed; they remained for some hours perfectly free from convulsions.

In a second series of experiments by Dr. Hammond, in imitation of the preceding of Frerichs, the kidneys were removed, and in three hours after, one drachm of urea in four fluidounces of water was injected into the jugular vein. Convulsions occurred in forty-five minutes, with alternation of stupor and death. Urea was eliminated by the stomach.

Urea and vesical mucus, as in the preceding experiments, were introduced after the animal had been nephrotomized, and in an hour convulsions came on, continuing for five and a half hours, when stupor and death occurred.[1]

Dr. Hammond did not notice the effect upon the heart and circulation. The importance of this will shortly be made apparent. On the other hand, M. Stannius did not find that death was hastened by the injection of urea into the veins of nephrotomized animals.[2]

From the foregoing exposition of the experiments made to determine the effects of urea in the blood, the conclusion to be drawn is, that this principle can be present, even in considerable amount, without disturbance of the nervous system. It is only when the quantity is excessive that any toxic influence is manifested. When in disease urea is retained in the blood, all the secretions may evince its presence, and it has been detected in the serum of dropsical effusions.

11. From his experimental researches, the inference that the presence of urea or of the elements of urine in the blood was the cause of the symptoms which have been attributed to uræmic intoxication, was so unsatisfactory to Frerichs, that he resorted to an explanation based on the conversion of urea into *carbonate of ammonia in the blood*. According to him, two agents are necessary for the supervention of uræmic intoxication —1st, an accumulation of urea in the blood; 2d, the presence of a ferment, by the agency of which the decomposition of the urea may be effected. The ferment alluded to by Frerichs is conjectural. He gives no proof of its existence, but likens it to emulsin, which occasions a reaction as in the case of amygdalin, producing hydrocyanic acid. Frerichs was led to the supposition that carbonate of ammonia was the cause of disturbance, from the presence of ammonia in the expired air of the lungs, in the blood, in the stomach, and in the secretions, when animals were nephrotomized and urea injected into their vessels. Dr. Hammond, when repeating these experiments, did not recognize ammonia, but found that urea was excreted by the stomach.

Drs. Todd and Bowman inform us that they tested the breath of a few patients labouring under the form of coma connected with albuminuria,

[1] Loc. cit.

[2] Leçons sur la Physiologie et l'Anatomie comparée de l'Homme et des Animaux, etc. Par Milne Edwards. Tome vii. p. 455.

and have examined the blood, but failed to demonstrate the presence of carbonate of ammonia.[1] This has been confirmed by Gallois, who concludes from his experiments that, when urea proves poisonous, it is by its own impression, as he could not detect carbonate of ammonia in the expired breath of animals to which urea had been given.[2]

That ammonia or its carbonate, when thrown suddenly into the vessels, can produce violent disturbance of the nervous centres, has been long since determined. Nysten threw ammoniacal gas into the pleura of a dog, when convulsions came on, and continued for several hours.[3] Orfila injected sixty grains of aqua ammoniæ into the jugular vein of a strong dog, when convulsions occurred, followed by death.[4] Seybert injected carbonate of ammonia into the crural veins of dogs, and produced convulsions with recovery.[5] These experiments were repeated by Frerichs and Dr. Hammond.

It is clear from the above statements that when strong ammonia or its carbonate is *suddenly* and *forcibly* thrown into the circulation, it will be followed by convulsions. The same is the case when other articles are similarly introduced. Dr. Hammond employed nitrate of potassa and sulphate of soda in the proportion of one drachm to four fluidounces of water, and found they were equally effective.

As carbonate of ammonia is a stimulant to the circulation, and may be given even in large doses for a long time without any apparent injury, and as it has been used in this way with advantage in convulsions,[6] we must regard its mere introduction into the general mass of blood as not directly inducing convulsions. It may, however, from the mode of its sudden introduction, be followed by suspension of the heart's actions, and hence become the cause of the phenomena manifested. A similar explanation may be given in the case of urea suddenly thrown into the jugulars.[7] In the case of Dr. Huxham, where a gentleman ate this salt as sugar is eaten, with the characteristic liquefacient impression, convulsions were not reported as a concomitant.[8]

Dr. Rees rejected the hypothesis that the presence of urea in the blood was the cause of nervous symptoms in albuminuria, because the symptoms and the amount of urea bear no relation to each other, *i. e.*, there may be much urea in the blood and no symptoms, or severe symptoms and little or no urea. Prof. Braun's view, that "Eclampsia parturientium is commonly the result of uræmic intoxication arising from Bright's disease of the kidneys produced mostly by carbonate of ammonia in the blood, perhaps also extractive matters of the urine," is purely hypothetical.

12. The argument adduced in favour of the hypothesis of *retention of the elements of urine and a chemical conversion of them into toxic matter* is founded on the absence in the urine of these elements in normal proportion. It is necessary, therefore, to examine into the validity of such a conclusion. Upon referring to the statement that has been made, with respect to the proportion of urea in albuminous urine, it will be perceived to what extent the amount of urea can be reduced. From this it is

[1] The Physiological Anatomy and Physiology of Man. By Robert Bentley Todd, M. D., F. R. S., and William Bowman, F. R. S. Am. ed., p. 800.
[2] Journ. de Physiologie, loc. cit.
[3] Researches, p. 140; Pereira's Mat. Med., Ammonia.
[4] Toxicologie Générale.
[5] Pereira's Mat. Med., loc. cit.
[6] See Pereira, Mat. Med., vol. i. p. 455.
[7] See subsequent section.
[8] Essay on Fever.

inferred that an amount proportionate to the deficiency is retained in the system, from inability on the part of the kidneys to perform their part as eliminators. The urine in albuminuria may properly be called "anæmic urine." It is of low specific gravity, and poor in the nitrogenized organic elements peculiar to healthy urine. It is the exponent of the condition of the system, and indicates a deficiency of nutritive material, as well as a want of vigour in the metamorphic processes which are connected with nutrition, formative and destructive; and we may assume with Thudichum that the "amount of urea is the measure of the most important of the changes of matter in the system."[1] In the cases of albuminuria presented to observation, with the blood impoverished, and deprived of its true proportion of normal ingredients, as has been shown by analysis, it can be understood that a less amount of urea will be produced, without having recourse to the supposition that a full natural quantity being formed, a part only is excreted, the remainder being retained in the system. This view of the case is confirmed by the researches of Dr. Rees, who detected so small an amount of urea in the blood.

With regard to the reduction of urea in the urine the remark of Becquerel is pertinent: "If the diminution of urea in the urine entails its presence in the blood, this should be the case whenever anæmic urine is met with, and hence urea should be found in the blood of chlorotic patients, &c., I think I have demonstrated the false way in which the diminution of urea is regarded."[2]

Much ingenuity has been exercised to account for the chemical changes involved in the production of such effete matters as urea, uric acid, &c., that are thrown off by the kidneys. Robin supposes that urea and uric acid are formed by the combustion of the albumen of the blood in the lungs, and consequently that when an impediment exists in the respiratory operations the albumen is thrown off by the kidneys. According to the views of this writer, the impediment to the respiration in parturient women is the cause of the albuminuria, and on this follow deficiency of the excreted elements of the urine and the impoverished, liquefied condition of the blood, with all the consequences incident to a state of exhaustion.[3]

Whether urea is formed by the transformation of albumen, or, in association with uric acid, it is produced by the consumption of the tissues, as supposed by Todd and Bowman, Lehman, and others, there can be no question that when albuminuria has continued for a length of time it is at the expense of the blood and of the nutrition of the tissues and organs, with that diminution of organic force which characterizes debility and exhaustion. It is reasonable then to conclude that less urea is formed than in a healthy, well-nourished condition of the economy.

Urea is one of the most soluble of organic substances, dissolving in its own weight of water. Its natural outlet is the kidneys, but a substitutive exit takes place under particular circumstances, hence the presence of urea in the fluid of dropsy, in the discharge from the skin, in the secretion of the stomach or alimentary canal (as in cholera). The urinous odour in some cases is due to this excretion. As a concomitant, albumen affords no

[1] A Treatise on the Pathology of the Urine, by J. L. W. Thudichum, London, 1858, p. 95.

[2] Séméiotique des Urines, &c., p. 513.

[3] Albuminurie dans ses Rapports avec l'Hématose, l'Eclampsie des Femmes enceintes, &c., par M. Edouard Robin, Paris. Premier Mémoire.

obstacles to the passage of this or any other soluble substance through organic structure, as is shown by experiments on osmosis; and as a colloid, it is no bar to the solubility of crystalloid substances. No reason can be adduced to explain the passage of albumen through the vessels of the kidneys to the exclusion of urea or of other soluble substances; and from the researches of Becquerel it would appear that in albuminuria the richness of urine in albumen, urea, and other solids, comports with the whole amount of fluid discharged.

The uniform reduction of the normal solid ingredients of the urine may reasonably be supposed to occur in obedience to a depraved and exhausted condition of nutrition.

The opinion that convulsions depend upon uræmic intoxication appears not to have received the sanction of Dr. Simpson, who, after reviewing the circumstances under which they occur, sums up by stating "that all these circumstances, the dropsy, the convulsions, and the albuminuria are simultaneous and successive effects of some one common or central cause, viz., a pathological state of the blood, to the occurrence of which pregnancy in some way peculiarly predisposes, probably from various acts of secretion, nutrition, and depuration being vastly increased and altered by utero-gestation."[1]

13. As the albuminuria advances the brain becomes functionally torpid, *drowsiness or a soporose state is a constant attendant*, which passes into coma, the patient dying insensible and apoplectic. It is the usual form of dissolution. The nervous symptoms which have been regarded as "uræmic" are similar to such as occur in patients who die from slow exhaustion of the powers of nature, be it by the loss of blood, or by deprivation of nourishment, as in chronic cases constantly encountered. It has been stated that Dr. Bright reported five cases of convulsions in connection with albuminuria, and that this was not the usual result is apparent from the fact that they were the only ones among the cases that he has given. It is seen then that convulsions here cannot be regarded in any other point of view than as exceptional symptoms.

14. In cases of *pregnancy* it has been found that a decided influence is exerted upon the *composition of the blood.* Becquerel and Rodier analyzed the blood of nine females of all conditions and constitutions, between the fourth and seventh month of utero-gestation, and between the ages of 20 and 41 years. The alterations determined by them were, diminution in the density of defibrinated blood, diminution in the density of the serum, increase in the proportion of water, very notable diminution of the globules, slight increase of the fibrin, diminution of the albumen of the serum, increase of fatty phosphuretted matter, which was in general seen most abundant when the blood was most impoverished.[2]

This exposition presents the basis for the comprehension of a still further reduction of the elements of the blood. The mean of the globules was 111.8; of the albumen, 66.1; of the fibrin, 3.5, and of the water, 801.6.

Writers on obstetrics state that pregnant women are for the most part plethoric. This is inferred from the tension of the arterial circulation, the disposition to headache, giddiness, and oppression that may accompany pregnancy. This plethora is occasioned by a superabundance of the aqueous element of the blood, the inconveniences of which are increased

[1] Edinburgh Month. Journ. of Med. Science, 1852.
[2] Recherches sur la Composition du Sang, p. 31.

by the embarrassment to its free circulation, through all the vessels of the body, from the gradually increasing pressure of the uterus as pregnancy advances. Within certain limits nature has her resources for the relief of this condition in the dropsical effusions that are occasioned. When then the proportion of the albuminous principles in the blood is lowered, nutrition is impaired, debility and relaxation ensue, and the tissues permit filtration through them.

The albuminoid nature of dropsical effusion having been determined, it can be readily comprehended how vascular tension, with a hydropic state of the blood is especially favourable to the production of albuminous effusions, and that an abundant escape of this element takes place from the kidneys. A pregnant anæmic woman is especially liable to the loss in this way of the nutrient elements of the blood, and this, commencing sometimes in the earliest months of pregnancy, continues as *a constant drain upon the sanguine system*, and induces a state characterized by inordinate susceptibility in the nervous centres; indeed, the very condition described and illustrated by Dr. Marshall Hall, as produced by the *loss of blood*. The constant waste of the fundamental element of blood-formation, albumen, can be regarded in no other light than as a *Hemorrhage*.

It has been seen in a previous section that M. Robin especially dwells upon the fact that albuminuria is a defect of hæmatosis. To this he traces the phenomena that generally are attendant upon this affection in pregnancy. But the alliance of albuminuria to hemorrhage has been especially dwelt upon by M. Germe, who directs attention to the fact that there is a certain number of diseases, in which hemorrhages occur from the blood having undergone alterations, as yet imperfectly determined, in the properties of some of its elements; petechia, ecchymosis, hæmatemesis are examples, as well as what occurs in typhus and yellow fevers, plague and pestilential diseases, scurvy and variola.

When attention was awakened to the presence of albumen in the urine, and search was made for it in numerous diseases, it was found, for the most part, in those enumerated. In yellow fever it always preceded black vomit, and constituted a valuable symptom of prognosis. In the epidemic yellow fever of St. Pierre de Martinique in 1856–57, albumen was found in the urine by Barrot. In the same disease of Lisbon in 1857–58, it was found by Contino. (*Germe, op. cit.*) Dr. La Roche, in his comprehensive work on yellow fever, says that Dr. Pennel found the urine so very coagulable as in some instances, when heated, to become an entire solid mass. The same fact was noted by Dr. Collins in Barbadoes.[1] The transition from this to nephrorrhagia is perfectly explicable, which is analogous to sanguine effusions in other parts of the body. If the hemorrhagic tendencies of this disease be considered, the significance of the fact recorded can be appreciated. There is ejected from the stomach in some cases of yellow fever a "white ropy acid fluid," this fluid was frequently noticed during the epidemic of Demarara in 1839, when it received the appellation of "premonitory or precursory fluid, or *white vomit*." This has been seen by Osgood, Ralph, and Dr. Catherall, of New Orleans.[2] Can it be other than an albuminous exudation from the stomach, or a *white hemorrhage*?

It has been shown that convulsions are produced by hemorrhage, whether experimentally, as in the hands of Kussmaul and Tenner, or by accidental causes, such as the direct abstraction of blood from anæmic individuals, or as

[1] Vol. i. p. 350.

[2] La Roche on Yellow Fever, vol. ii. p. 285.

a consequence of loss of blood in connection with parturition. In pregnant females the reduction of the nutrient elements of the blood may not be carried to the extent of producing such direct results, but in view of the fact that the exhaustion of the system by the loss of blood may lead to a convulsive attack, it can be understood that a proneness to it may arise under the slow and gradual process of disintegration of the blood which is going on for weeks and months preceding the struggle which eventuates in delivery.

15. In cases of puerperal convulsions there appears to exist constitutionally, or to have been engendered in the course of pregnancy, an *aptitude on the part of the nervous system for the production of convulsions*. This is what has been previously specified as *convulsibility*. It must be dependent on the nutritive condition of the nervous centres.[1] In albuminuria the foundation may be laid for eclampsia, in the convulsibility engendered by loss of the nutrient elements of the blood. It may, perchance, not be called into activity, but if heightened by too great a loss of blood from the uterus in parturition (and this need not amount to what would be called a hemorrhage), it becomes fearfully effective.

Robin states that loss of blood from the uterus is more apt to follow on the albuminous, dropsical condition when delivery takes place.

Convulsions are preceded by premonitory symptoms, or they occur at once without any previous manifestation of disturbance of the brain. There may be headache and throbbing, giddiness, flushing of the face, flashes before the eyes, intolerance of light and sound, and a tense, rapid pulse, which symptoms are as much the result of an anæmic and exhausted condition of the system as of a plethoric one. The true origin of these symptoms has been admirably set forth by Dr. M. Hall.[2] When referring to the premonitory symptoms, the true condition of the system is fully appreciated by Dr. W. Tyler Smith, who says, "these premonitory symptoms of puerperal convulsion are in reality the symptoms of the particular condition of the spinal-nervous system in which convulsions may occur; they are the signs of what may be termed the convulsive *erethismus*." This is but another term for proneness to convulsive movement. Dr. Brown-Séquard, as well as Dr. J. Grainger Stewart, has likened this condition of the nerve-centres to that produced by strychnia, brucia, and other convulsives. The former writer states that they act by increasing the reflex power of the cerebro-spinal system, so that the least excitation, even breathing, causes reflex convulsive movements.[3]

16. Dr. M. Hall, when summing up the immediate causes of puerperal convulsions, concludes by saying "*This convulsion itself resembles epilepsy.*" To no authority can the medical inquirer turn for an analysis of the phenomena of epilepsy with more satisfaction than to the admirable

[1] Dr. Brown-Séquard discovered more than twenty years ago, that certain conditions of the spinal cord could be artificially produced, which would enable him to produce convulsions at will. Researches on Epilepsy, Boston, 1859. From the examination of the spinal cord in epileptics, Esquirol found sufficient alteration to account for the proneness to attacks. Traité des Maladies Mentales, 1838, tome i. p. 311.

[2] In Chapter II. of Dr. M. Hall's treatise "On the Morbid Effects of the Loss of Blood." The cases given are derived from his own observation, and from that of Dr. Cooke, Dr. Abercrombie, Andral, Gooch, &c.

[3] Op. cit., p. 30.

essay of Dr. Radcliffe.[1] From him we may be permitted to draw facts and conclusions, especially pertinent.

Epileptics have a depressed or enfeebled vital constitution, their complexion is pale, countenance languid and dejected, flesh flabby, pulse weak, and animal heat wanting; their strength is easily exhausted. Previously to the fit the skin becomes paler, and the pulse feebler. At the commencement of the fit, there is syncope; at its termination, asphyxia. In the former case it is dependent in a great measure upon the action of the heart; in the latter, upon the imperfect aeration of the blood. Dr. Radcliffe is the first author who has traced out with precision the successive stages ef epileptic convulsions, and the connection between these stages and the state of the nervous centres, the circulation and respiration.[2]

The opinion has been boldly expressed by Trousseau that no difference exists between eclampsia and epilepsy. With him they are identical, with regard to their symptomatic expression, and their proximate cause, and he says: "When treating of epilepsy I will show that an attack of eclampsia is exactly like one of epilepsy, and that no physician will ever be able to distinguish between convulsions occurring in a pregnant woman long affected with epilepsy, and convulsions in a woman seized with eclampsia at the beginning of labour."[3]

17. From the whole train of testimony that has been adduced there can be no hesitation in admitting that in cases of convulsive attacks, be they from hemorrhage, be they associated with the parturient state in connection with albuminuria, or be they epileptic, there exists an underlying condition of the nervous centres which is especially conducive to their occurrence, and which is exhibited at any moment when an exciting cause arises for bringing it into operation. We will enter now upon the discussion of the *forces which are brought into activity, and of the mechanism of convulsive movements.*

The *eccentric* origin of puerperal convulsions has been surmised by several of the authorities, who, at the same time, assume the cause to be determination of blood to the brain. Thus Burns holds that "they arise particularly from uterine irritation, but also seem frequently to be connected with a neglected state of the bowels." The determination of blood to the head is somehow, either directly or indirectly, attributed to such irritations.[4] Dr. Robert Lee adopted an analogous opinion, "that the condition of the brain on which the loss of consciousness depends is obviously produced by sympathy with the uterus." Dr. Ramsbotham, Churchill, and Dr. Locock, have expressed the same views.

Since the investigations of Dr. M. Hall and Müller have so clearly illustrated the principle of reflex action as a physiological truth, the application of it to the explanation of the causes and the mechanism of convulsions has been received as throwing light upon this most difficult of pathological problems. This mode of accounting for puerperal eclampsia has

[1] Epilepsy and other Affections of the Nervous System, which are marked by Tremor, Convulsion, and Spasm, their Pathology and Treatment, by Charles Bland Radcliffe, M.D., London, 1841.

[2] The views of Dr. Radcliffe will be again referred to, when the course of an attack of eclampsia is traced.

[3] Lectures on Clinical Medicine, delivered by A. Trousseau. Translated by P. Victor Bazin, M.D., &c., Sydenham Society, London, 1868, vol. i. p. 32.

[4] Op. cit., vol. i. p. 194.

been applied and illustrated by Dr. W. Tyler Smith in his work upon obstetrics.[1]

The sources of convulsions induced by reflex action, which have been enumerated by Dr. Smith and others, are, the irritation of the uterus connected with gestation or labour; the irritation from the hand when introduced within the uterus to remove a retained placenta; the pressure upon and distension of the vagina during the passage of the child, and more especially of the head, and distension and irritation of the os externum; the irritation of the uterus or the vagina, and of the soft external parts, by the unskilful use of instruments. Reflex irritation may proceed, moreover, from other organs, as the stomach, the bowels, or the bladder.[2]

Admitting the source of attacks of puerperal convulsions to be reflex, the conclusion cannot be drawn, from what has been previously established with respect to convulsions arising from exhaustion and hemorrhage, that the impression through the medium of the spinal column is directly communicated to the muscles. The determination of the intermediate influences brought into operation involves the study of the phenomena which are precursory, as well as those attendant on an attack of eclampsia. The mode of explanation depends upon our ability to trace the chain of association.

18. The *loss of consciousness attended by pallor of countenance and by arrest of circulatory activity is due to syncope.* These phenomena are followed by convulsions. The syncope may follow the premonitory symptoms, or it may occur without them.[3] In what way or by what agency loss of consciousness is produced becomes a subject of inquiry.

Keeping in view the influence of reflex action, suspension of the circulation in the brain occurs, with loss of consciousness or syncope, results induced either from stoppage of the movements of the heart, or from contraction of the capillary arterial vessels in the brain itself.

With respect to the first of these causes of suspension of cerebral circulation, *the arrest of the heart's action*, it may be stated that many facts confirm the conclusion that it is produced by reflex influences. The sudden death from cold water introduced into the stomach under certain conditions of the system, the effects of shock from a blow upon the stomach or testes, are instances in point of sudden stoppage of the movements of the heart. Dr. Brown-Séquard states that he made a great many experiments which show positively that a sudden excitation of the abdominal sympathetic nerves sometimes kills, and often diminishes the movements of the heart by reflex action.[4] He says: "I have seen a gentleman suddenly drop down pulseless, in the most complete syncope, from a pain in the abdomen."[5] It must be through the connection with the spinal cord. This is proved by the fact that a section of either the par vagum, or the spinal cord, or the splanchnic nerves, allows any kind of irritation to be made on the abdominal sympathetic without a stoppage taking place in the heart.[6]

[1] Parturition and the Principles and Practice of Obstetrics. By Wm. Tyler Smith, M. D., London. Am. ed. 1849.

[2] Cases illustrative are given by Dr. Smith.

[3] The premonitory symptoms have been given at page 454; their dependence on an anæmic state has there been set forth.

[4] Course of Lectures on the Physiology and Pathology of the Central Nervous System. By C. E. Brown-Séquard, M. D., F. R. S. Phil., 1860. pp. 159.

[5] Ibid.

[6] Leçons sur la Physiologie et l'Anatomie comparée de l'Homme et des Animaux. Par H. Milne Edwards. Tome ii. p. 150.

That the heart is under the control of the spinal axis is shown by the experiments of Legallois, who found that sudden destruction of the spinal marrow arrested its movements. Wilson Philip found that the same effect is produced when the brain is crushed by a blow; but that, when the connection between the cerebro-spinal system and the heart had been previously interrupted by cutting the pneumogastric nerves on both sides, the heart, under the injuries to the spinal centres, continues to beat. The experiments of Weber and Budge with respect to the stoppage of the heart by galvanism to the spinal marrow or to the pneumogastric nerves, have been verified by Schiff, Hoffa, Ludwig, Bernard, and others.

The force of the heart's action is an element in estimating the readiness with which it may be suspended. This force, which depends upon abundant nutrition, may be reduced by its abstraction. Hales tells us that the pressure produced by the contractions of the heart rapidly diminishes in proportion to the loss of blood in the animal. Water thrown into the veins produces an analogous effect.[1] In a hydræmic condition of the blood there must be a corresponding deficiency in the inherent force of the heart, and a more ready yielding to the reflex agencies that are brought to bear upon the organ. Under such conditions as have been represented to be most conducive to convulsions, it is easily comprehended how there is greater facility of cessation in the action of the heart when impressed by remote influences through the nervous system. Syncope occurs from this cause, and convulsions follow. Excessive mental emotion, whether depressing or joyful, may be followed by interruption of the movements of the heart and syncope. Cases are recorded of convulsions, puerperal or other, arising from this cause. Dr. Smith gives us an instance in which a husband returned from a distant and perilous journey a day or or two after the delivery of his wife, who in the very act of greeting him fell into a convulsion; and, "instead of embracing a conscious mother, he held the rigid form of an epileptic."[2]

Instances of emotional causes are given by Mauriceau, Merriman, and others. Delasiauve refers to sensations and emotions as being productive of epileptic attacks; thus odours, sights, and sounds are cited as well as frights.[3] The author witnessed the death of a chimney-sweep, a coloured boy of eight or nine years of age, who was thrown into convulsions from fright in the theatre, caused by the rush upon him of an attendant disguised in a mask.

It appears to us that we are warranted in attributing attacks of convulsions to the stoppage of the heart's action, brought about by the several means that have been detailed. If reflex action from any organ be the first link in the chain of connected events, the stoppage of the blood in the central nervous vessels becomes the second; upon which are superinduced results depending upon this state.

We have already expressed the idea that by throwing urea, or nitrate of potassa, or ammonia, suddenly into the circulation, convulsions are preceded by stoppage of the heart's action; this is worthy of further investigation, as it has not been alluded to by experimenters. The experiments, when narcotics and sedative substances have been used, and convulsions have followed, are defective from not reporting the state of the heart. We have noticed in the exhibition of ethers, that the first im-

[1] Hæmostatics, p. 18.
[2] Loc. cit.
[3] Traité de l'Epilepsie, 1854, p. 137.

pression of sedation is attended with depression of the circulation, the almost disappearance of the pulse, and convulsive movements which are succeeded by entire anæsthesia, and by a purple hue of the lips and face, with rising in force of the pulse until it becomes slow and full. This condition can be maintained by the continued moderate exhibition of the anæsthetic.

The second cause alleged for the abstraction of blood from the brain is *contraction of the arterial capillaries*, produced by excito-motory influence, through the sympathetic nerves, which control the capillary circulation. This is the supposition of Dr. Brown-Séquard, who attributes to it the pallor of the face and loss of consciousness. Seeking for an explanation of epileptiform convulsions, he supposes that while there is contraction in the arterial system, by which the blood is expelled from the arterial capillaries of the brain, there is congestion in the veins of the central upper motor tract, whereby stimulation is engendered from the carbonic acid gas in the venous blood, this stimulation to the excitable motor tract being the cause of convulsions.[1]

There are many reasons that might be given to show that the abstraction of blood from the brain by a reflex impression upon the arterial capillary vessels is not the true solution of the cause of syncope and loss of consciousness; but with respect to the fact that there is congestion at the base of the brain, when all the other parts of it are deprived of blood, it must be recollected that the conclusions of Kellie and Abercrombie have been proven to be incorrect by the experiments of Dr. Burrows, Donders, and Kussmaul and Tenner.[2] The latter experimenters expressly state that the medulla oblongata and the upper part of the spinal cord are measurably deprived of blood when convulsions have occurred from hemorrhage.

What part carbonic acid performs in connection with convulsions, will be seen in a subsequent section.

19. *The order in which phenomena occur in cases of convulsions is incompatible with their production by venous blood.* It cannot be supposed that the venous blood already present in the brain at the time the circulation is interrupted, either by stoppage of the circulation or by contraction of the arterial capillaries, is capable of producing convulsions, as it has hitherto produced no such results, and hence a normal amount of venous blood cannot be a cause of disturbance. It cannot, moreover, be supposed that there is an increase of the venous blood under contraction of the arterial capillary vessels, or under suspension of the action of the heart; an augmentation, therefore, of venous blood with its assumed irritant carbonic acid in the vessels of the base of the brain, cannot be admitted. Let us further look at the order of the phenomena in the case of epileptiform convulsions, and see how far the above statement is warranted by facts.

It is pretty uniformly conceded that the first announcement of a convulsive attack is syncope, with loss of consciousness, attended with pallor of the features. Then follow twitchings of the eyelids, of the muscles of the face, and distortion of the eyes, after which the convulsive movements extend to the neck and muscles of the respiratory apparatus, involving the larynx; this is attended, in some cases, by a short stifled cry, which is automatic, then universal convulsive movements set in, with distortion of the features, thrusting forward of the tongue, and forcible contraction

[1] Researches upon Epilepsy, op. cit., p. 66.

[2] See ante, p. 440.

of the muscles of the trunk and of the upper and lower extremities. From the time that the larynx is lifted, so as to close the glottis, which is termed by Dr. Marshall Hall *laryngismus*, until respiration is completely impeded, the asphyxiated state may be said to be in progress, which, when completed by the fixedness of the chest, involves a fulness and turgescence of the veins of the neck and head, distension of the features, and lividity of countenance. After a longer or shorter period, there ensue suspension of convulsive movement and a comatose condition of the brain.

From the preceding enumeration of events in regular order, the convulsive movements would appear to follow the loss of consciousness, which is the result of interruption in the circulation of the brain, and the third nerve, or motor oculi, which is the first motor nerve of the spinal tract, is among the first to be influenced, there being progressive invasion from above downwards, when asphyxia closes the scene, leaving the patient in a stupor until there is a return of aeration of the blood and a gradual restoration of the faculties.

Dr. M. Hall specifies "varied distortion of the eyeball" as the first occurrence, and a forcible closure of the larynx as the second symptom, with expiratory efforts which suffuse the contenance and congest the brain with venous blood. In this he admits the commencement of the convulsions in the first set of muscles under the control of the motor tract. The third symptom specified by him is the thrusting of the tongue from the mouth, and next the general convulsive movements.

As has been stated, the black blood already in the brain, when a supply of arterial blood is cut off by arrest of the heart's action, by compression on the arteries, or contraction of their capillaries, cannot be the cause of the convulsive attack. The convulsion entails the state of asphyxia which is consequent upon it, as an effect of the lifting of the larynx and fixedness of the chest; it is not the cause of the convulsion. When the brain is finally deluged with black blood, partly from the impediment to the return of venous blood from the organ, and partly from the propulsion of non-aerated blood into it as the heart regains its power, the convulsion subsides and coma is substituted for it. This is *natural narcotism*.

From the order of sequence thus exhibited we find nothing to warrant the conclusion that the originating cause of convulsions is the stimulation by blood containing carbonic acid to the excitable motor tract of the central nervous structures.

20. Bichat believed that *it was sufficient to introduce a small quantity of air into the vascular system of an animal to destroy it promptly and in a state of convulsions*. The effect of introducing air and other gaseous fluids into the venous and arterial system was subsequently investigated by Nysten. He found that a considerable amount of air could be injected, in a limited space of time, into the veins of a living animal, without producing any grave symptom primarily, except increased rapidity of pulse and of respiration, provided precautions were taken, in making the injections, not to disturb the pulmonary side of the heart; but that this fluid when injected in a large amount occasioned embarrassment in the capillary vessels of the lungs and lesion of the bronchial mucous membrane, accompanied with cough and expectoration. Asphyxia supervened, with gradual reduction of the pulse, terminating in death without convulsions. The lungs contained frothy mucus and dark blood; no gas was found in the heart or bloodvessels. The source of death was in the lungs. When, however, air was injected in larger quantities, and more frequently, convulsions

were attendant upon death. Thus 70 cubic centimetres of air (or 27½ cubic inches) having been injected at once into the jugular vein, in a few seconds a cry was uttered, the *pulse became imperceptible*, there were violent agitation with opisthotonos, ejection of urine and feces, some weak inspiration, and death. The pulmonary cavities of the heart were enormously distended with air, and the lungs healthy.

Every time that a large quantity of air was thrown into the jugular vein the animal perished with the same phenomena. If the animals were weak and feeble, less was required; but if strong and of good size, from 100 to 120 centimetres (39 to 47 cubic inches) were required to occasion death. In all these cases the *animals became pulseless* and were attacked with convulsions. Presuming from his experiments that death proceeded from an inordinate distension of the heart, preventing the pulmonary ventricle from sending the blood into the lungs, he opened the subclavian vein in an animal deprived of pulse and in convulsions, when considerable gas was expelled by thoracic pressure. In an instant the animal made an inspiration, *the pulse became perceptible*, at first small and feeble, acquiring force as the respiration became established, and soon there existed no other accident than the wound. He found that the relief thus afforded must be speedy, in one or two minutes, or the distension of the heart will so weaken its parietes as to preclude resuscitation.

If the air be introduced gradually, so as slowly to distend the right cavities of the heart and weaken its parietes to the extent of not being able to maintain the circulation, the brain is deprived of blood in a gradual way, and what is furnished to it is non-aerated and venous. In this case the animal dies without convulsions, as was the case in which asphyxia was produced. The convulsive movements then did not proceed from the venous character of the blood in the brain, as black blood in sufficient abundance had been sent to the organ to have produced them before the final stoppage of the heart. When, after the production of black blood from the slow introduction of air into the heart, time was afforded for its re-oxygenation, if a sufficient quantity was suddenly injected to stop the heart, convulsions occurred, and the animal died from asphyxia after they had ceased.

When, instead of throwing atmospheric air into the vein, it was thrown into the *carotid artery* in small quantities at a time, no effect was perceptible, the activity of the animal was not arrested, nor was its intelligence. When a larger quantity was injected, in an instant the activity of the brain was obliterated, and rigor mortis occurred as in apoplexy. The organic functions, as of the heart, continued, the respiration became finally stertorous, and in three hours the animal died. No convulsions were produced. In this case the apoplexy was due to pressure.

When oxygen, instead of air, was introduced into the jugular vein, the results were analogous; small quantities were injected with quickening of pulse and respiration, a large quantity with the stoppage of the heart, and violent convulsive movements. On the right side the blood in the heart was bright-coloured and frothy in an animal when small quantities were slowly introduced at first and then enough to stop the heart, while on the left side the blood was black, without any gas. Nitrogen and nitrous oxide produce the same effects, according to the manner of introduction. In the case of nitrous oxide and oxygen, in which the heart's action was arrested by one injection, the blood in the left side of the heart

was crimson. The convulsions that followed could not be attributed to black blood thrown on the brain.

When carbonic acid gas was slowly injected, it elevated a little the beat of the pulse and increased the respiration. When largely injected at one time, the pulse disappeared and opisthotonos and death ensued. The conclusion to be drawn from the experiments of Nysten is, that carbonic acid gas can by reason of its solubility be injected into the nervous system without arresting the circulation; that it does not act primarily on the brain with the production of convulsive movements; but that when there is injected much more than the blood of the right side of the heart can dissolve, it determines distension of the organ, convulsions, and death. Without this latter result it may be injected in sufficient quantity to affect the colour of the blood in the left side of the heart, which is furnished to the brain. To determine the effect of the direct action of carbonic acid upon the brain, injection was made, at different successive periods, of a certain quantity of carbonic acid into the carotid artery; this was tolerated without effect upon the cerebral functions; a larger amount having then been at once injected, the animal suddenly ceased to see and to hear; his sensibility and motor capability were destroyed; the limbs were seized with a spasmodic rigidity; the respiration became profound and stertorous; the pulse was slowly enfeebled, and the animal died in three or four hours. Nysten states that it is necessary to inject into the carotids a larger quantity of carbonic acid gas than of air to determine *apoplexy*. The reason of this is the solubility of carbonic acid gas, which is absorbed by the blood; but when introduced in larger proportion than can be taken up, the injection produces pressure beyond measure of the capillary system of the cerebral pulp. He argued that, if the effect was due to the action of the gas on the brain, it would produce some impression when moderately injected.

The occurrence of death from the introduction of atmospheric air into the veins during operations on the neck has been investigated by Amussat. It appears that death may occur either with or without convulsions. "Where death is instantaneous, the latter is the case; while if the introduction be gradual, with progressive interruption of the heart's action, convulsions of various grades, from mere trembling to decided spasms, have been noticed."[1]

Autopsy reveals a fulness of the cavities on the right side of the heart, with frothy blood in them, while there is emptiness of those on the left side.

21. The *irrespirable character of carbonic acid gas* has been known from its first discovery. The question that has been at issue among physiological experimenters is whether, when introduced into the lungs, it is innoxious and produces its effects simply by exclusion of the vitalizing pabulum oxygen, or whether it exerts an impression, from being absorbed, which is peculiar, and which brings it within the category of sedative agents.

The first of these opinions, that the effects are negative, was maintained by Bichat and Nysten. Seguin found, however, upon experiment, that if air be mixed with one-thirteenth of its bulk of carbonic acid, its presence when respired was hardly perceptible; when it contained one-tenth,

[1] Recherches sur l'Introduction Accidental de l'Air dans les Veines, &c., par J. Z. Amussat, Paris, 1839.

it produced a stimulating sensation and marked contraction in the lungs; beyond this it becomes more and more noxious; and, finally, asphyxiates when it forms one-fourth or one-fifth of the respired air.

Rolando performed the experiment of tying the trachea on one side, and of allowing the animal to depend upon respiration through the other, yet life was maintained without difficulty through a single lung. When, however, carbonic acid was introduced into one lung and atmospheric air into the other, the animal was stupefied and destroyed.[1]

That carbonic acid is a positively poisonous substance, producing sedative effects, was maintained by Collard de Martigny. He believed that asphyxia was a positive result of its inhalation, and he defined asphyxia to be "the temporary or definite suspension of life from want of respiratory operation."[2] His reasons are:—

1. That when mixed with one-fifth its bulk of oxygen, it should be innoxious, which is not the case; on the contrary, when the proportion is changed to 79 per cent. of oxygen and 21 of carbonic acid, death is rapid; and even when air is mixed with carbonic acid gas to the extent of supporting combustion, it is deleterious.

2. That carbonic acid acts deleteriously so much sooner than gases (nitrogen and hydrogen) known to be negative in these operations.

3. That when the bodies of living animals are placed in a bath of carbonic acid gas, deleterious effects are produced.

4. That carbonic acid profoundly affects the head, first with headache, vertigo, &c., and finally with loss of sensibility.

5. That carbonic acid produces more decided effects than gases that are only negative; for, from it the animal can with greater difficulty recover. In the case of nitrogen and hydrogen it is the black blood that asphyxiates, and this in various degrees; but with carbonic acid the asphyxia is complete from the commencement, and hence the difficulty of reanimation.

6. That when beverages contain carbonic acid gas, they excite and derange the brain.

Collard de Martigny maintains that when the quantity of carbonic acid introduced into the blood is large, as in the experiments of Nysten, it is thrown off by the lungs. He regards this substance as excitant in the first instance, but powerfully stupefying and depressing, with a secondary influence upon respiration. It affects principally and primarily the nervous and cerebral organs.[3]

22. M. W. F. Edwards demonstrated the fact that the *formation of carbonic acid is not a direct result of the introduction of oxygen into the lungs*, but is independent of its presence there; that carbonic acid continues to be produced when the lungs do not contain the least quantity of this principle of combustion.[4] Oxygen, when introduced into the lungs, is absorbed through their delicate tissue by the blood, and displaces the carbonic acid gas that has been formed in the tissues by the oxygen that has been carried into them. If oxygen is not afforded to the

[1] Archives Générales de Médecine, tome v., 1824.

[2] Archives Générales de Médecine, tome xiv. p. 205, de l'Action du Gas Acide Carbonique, &c.

[3] Op. cit., p. 220.

[4] Milne Edwards, op. cit., tome i. p. 9. If new-born animals, before having respired, are placed in hydrogen, they will live a short time with suspended animation, exhaling carbonic acid that has been displaced from the blood in the lungs.

blood by respiration, the carbonic acid is not exhaled, and black blood is circulated through the organs.

The fact that oxygen and carbonic acid both exist in the blood, which was stated by Sir Humphrey Davy in 1799, but lost sight of, has been fully determined by Magnus. He found that the proportion of oxygen was greater in arterial blood than in venous, and proved that venous blood contained at least one-fifth of its volume of free carbonic acid more than sufficient to furnish the whole of the gas disengaged by respiration.[1]

The following proportions of oxygen, carbonic acid, and nitrogen are given as existing in arterial and venous blood :—

	Arterial.	Venous.
Oxygen	23.2	15.3
Carbonic acid . . .	62.3	71.6
Azote	14.5	13.1

Here, then, we have afforded the proof "that the quantity of carbonic acid brought into the respiratory apparatus is greater than that which escapes from it; from which it follows that a certain proportion of this gas can be returned to the brain with the oxygen that has been absorbed and which furnishes a new amount by the decomposition of the tissues. This is consistent with the results of Nysten as regards the tolerance on the part of the brain of moderate quantities of carbonic acid.

With the foregoing summary before us of the experiments and observations derived from the most authoritative sources, it will be admitted that at the period of the inception of convulsive attacks, whether from loss of blood, or stoppage of the flow of blood to the brain, from pressure upon the vessels, or interruption of the heart's action in connection with syncope, before any impediment to respiration has occurred, there can be no accumulation of carbonic acid in the tissue of the motor tract of the brain other than that to which the structure mentioned is accustomed. Even under the supposition that this noxious agent is a direct excitant, the proof is wanting to account for an inordinate amount of motor influence. It is sufficiently clear, however, from the evidence presented, that when in full operation, the impression of this gas is sedative, and the hypothesis must consequently *be rejected that it is the direct agent in the production of convulsive movements.*

23. It is now conceded that an attack of convulsions proceeds from above downwards (see ante p. 438). Dr. Marshall Hall, in describing the sequence of convulsive movements, after specifying the eyes and features as being primarily affected, states that the second series of symptoms are "a forcible closure of the glottis and expiratory efforts," which suffuse the countenance, and probably congest the brain with blood. These constitute the phenomena of *laryngismus.*

The mechanism of laryngismus is dependent upon the power of lifting the larynx by muscular action, so that the rima glottidis is brought forcibly in contact with the epiglottis, by which the aperture of the larynx is closed, and the introduction of air into the lungs precluded. This may be induced through reflex action by substances that are irritating to the orifice of the larynx. Mechanical irritants are thus operative.[2]

[1] Milne Edwards, op. cit., tome i. p. 443.

[2] According to Dr. M. Hall, the excitor nerve in this case is the superior laryngeal, and the motor nerve is the inferior laryngeal or recurrent, the centre being the medulla oblongata, op. cit., p. 61.

The irrespirable character of carbonic acid gas has been already alluded to; it is, moreover, in its direct impression upon the fauces and upper portion of the larynx, a pungent stimulant, and calls forth the movements constituting laryngismus in resistance to its introduction into the lungs. The struggle, resulting from placing animals in the carbonic acid gas exhaled from the earth in the Grotto del Cane, was noticed by Mead.[1] The symptoms specified by Attumonelli, in connection with experiments at the same locality, are first a contraction of the chest, and then strong contraction of the belly.[2] There is no doubt that irritation of the larynx, from whatever cause, produces, by reflex action, local convulsion of the muscles concerned in the function of this organ. The transient struggle exhibited by convulsive movements in other parts of the system is of a partial nature, and in this differs from an attack of eclampsia, in which the whole track of the excito-structure is involved. In the case of respired carbonic acid, when the primary asphyxia, caused by irritation of the glottis and by suspended respiration, has caused a blunted sensibility of the nerve-centre involved, resistance to the introduction of the gas is no longer maintained, and helpless narcotism occurs.

An interesting confirmation of the foregoing exposition is afforded by the recent investigations of Dr. H. C. Wood. It is well known that when veratria is exhibited, either by the stomach or hypodermically, convulsions follow. Dr. Wood, after administering this article, placed the animals in a box containing carbonic acid gas, with the result of asphyxia and death, but without convulsions. When taken from the box, or when the supply of gas was not sufficient to maintain the narcotism, convulsions were induced.[3]

24. In a case of epileptic attack, or in eclampsia, *the closing of the glottis is the first effort of nature for the relief of the convulsive movement.* The asphyxia thus produced will be intense in proportion to the violence of the convulsions and the duration of the closure of the glottis; the first effect of which is retention of the atmospheric air already in the lungs, and the impossibility of escape of the carbonic acid that has been given up by the blood in the interchange with oxygen. The oxygen contained in the last charge of atmospheric air in the lungs, before communication with the external atmosphere has been cut off, enters the circulation, and in the tissues contributes to the formation of carbonic acid. In consequence of no more oxygen being introduced into the lungs, carbonic acid cannot be displaced from the blood, and is retained in this fluid. The blood then is super-dosed with carbonic acid, while the lungs contain the same gas with nitrogen, and hence the *black blood* with which the brain is supplied. This non-oxygenated blood, in association with its stasis in the capillary vessels from impeded respiration, constitutes the true source of narcotism.[4] When this narcotism has been decidedly produced

[1] The Medical Works of Richard Mead, M. D., London, 1862, vol. i. p. 132.

[2] Mem. sur les Eaux Minerales de Naples, Paris, 1804.

[3] Am. Journ. of Med. Sciences, July, 1870, on the Influence of Section of the Cervical Pneumogastrics upon the Action of Emetics and Cathartics.

[4] With spasms of the muscles of the larynx is that of the muscles of the neck, and fixedness of the chest; the pressure upon the return vessels of the brain is thus maintained, and the lungs and heart cannot receive the blood from the brain. This condition is another cause of coma or apoplexy, as a sequel of convulsions. It is stated that an attack of convulsions may sometimes be more rapidly arrested by compression of the carotids; this operates by increasing the difficulty of the heart's action, and by impeding the return of blood from the brain to that organ, conditions which more speedily induce narcotism in the brain.

convulsive movements cease, and coma follows. So long as oxygen can be supplied to the tissues of mammiferous animals, excitability is maintained; but when this is replaced by carbonic acid, and black blood circulates in them, excitability is proportionably diminished and death is threatened. From this can be understood the great difficulty of a return to consciousness when the functions of the brain and of the nervous centres have been inordinately overwhelmed, and when their power of re-excitation has been nearly destroyed. With this view of the results which follow convulsive attacks, we can accord in the statement of Robin, "that the attack itself originates a cause which puts an end to it, and allows to it only a short duration."[1]

Finally, in calculating the chances of recovery is to be estimated the exhaustion of the nervous system, for, even when the respiratory movements are reinstated, exhaustive, secondary passive congestions may slowly be engendered, and with it suspension of all the vital processes, to which the individual succumbs.

From the foregoing summary of all the information that we can discover, having reference to the origin and course of puerperal convulsions, we may draw the following conclusions :—

1. That convulsions are centric or eccentric.
2. That determination of blood to the head, although productive of a comatose state, is not the cause of convulsions.
3. That convulsions follow directly the loss of blood on stoppage of the circulation of the brain.
4. That the whole motor nervous tract is involved in the production of convulsions, and that other portions of the brain are not directly instrumental in producing them.
5. Convulsions are consequent to the abstraction of nutrition in the motor portion of the brain.
6. Anæmia predisposes to convulsions.
7. That anæmia is produced by albuminuria, and connected with this is dropsy.
8. That the blood in albuminuria and dropsy is deprived of its nutrient elements, and becomes hydropic.
9. That the constitution of the urine corresponds to the constitution of the blood, and the amount of urea in it is in accordance with that formed in the blood.
10. That neither urea nor carbonate of ammonia in the blood constitutes the cause of convulsions.
11. That in albuminuria the predominant symptoms are sopor and coma.
12. That albuminuria is to be regarded in the same category of diseases as hemorrhage.
13. That from the constitution of the blood in pregnancy, and especially when its hydropic condition is increased by albuminuria, there is engendered an especial aptitude to the occurrence of convulsive attacks, which has been called *convulsibility*. This depends upon altered nutrition in the nervous centres.
14. That puerperal eclampsia and epilepsy are analogous affections.
15. That the mechanism of convulsions involves the production of syncope, which depends upon the suspension of the heart's action, and that

[1] Op. cit.

this occurs through the instrumentality of reflex action, by shock, or by loss of blood.

16. That the carbonic acid of venous blood is not the originating cause of convulsions.

17. That the order of convulsive movements is progressive, from above downwards. Syncope and loss of consciousness constitute the first symptoms; secondly, convulsions begin in the muscles of the eyes and face, and then occur in those of the larynx, throat, chest, and extremities; thirdly, when laryngismus is complete asphyxia is produced, and the convulsions are suspended by coma.

18. That if air be gradually introduced into the veins of an animal, asphyxia is produced and no convulsions occur; but if introduced suddenly, so as to distend the right side of the heart and prevent its contractions, convulsions immediately follow. The same is the case with oxygen, carbonic acid, and other gases.

19. When air and other gases are introduced into the carotid arteries, in amount sufficient to produce pressure, apoplectic symptoms are the consequence. But if air or carbonic acid, in quantity capable of being absorbed by the blood, be introduced, its presence is tolerated by the brain.

20. That carbonic acid is irrespirable, and positively stupefying when inhaled, hence asphyxia can be produced by it.

21. That when asphyxia is produced in the course of convulsions by the impediment to respiration, and the blood becomes completely venous in the lungs and circulation, it, in connection with the pressure induced by impeded respiration, terminates the attack by a species of narcotism. In this way convulsions are self-limited. J. C.

ART. XXII.—*Modern Dermatology.*

1. *Lectures on Eczema and Eczematous Affections.* By ERASMUS WILSON, F.R.S., F.R.C.S., Prof. of Dermatology in the Royal College of Surgeons of England. London: John Churchill & Sons, 1870.
2. *Journal of Cutaneous Medicine and Diseases of the Skin.* Edited by ERASMUS WILSON, F.R.S. London: John Churchill & Sons.
3. *Traité des Affections de la Peau.* Par le Dr. E. BAUDOT, ancien Interne de l'Hôpital Saint-Louis. D'après les doctrines de M. Bazin. Paris: F. Savy, 1869.
4. *Annales de Dermatologie et de Syphiligraphie.* Publiées par le Docteur A. DOYON. Paris: Victor Masson et Fils.
5. *Lehrbuch der Hautkrankheiten.* Von Dr. ISIDOR NEUMANN, Docent an der k. k. Universität in Wien. Wien, 1870. Wilhelm Braumüller.
6. *Archiv für Dermatologie und Syphilis.* Herausgegeben von Dr. HEINRICH AUSPITZ und Dr. FILIPP JOSEF PICK. Prag.
7. *The American Journal of Syphilography and Dermatology.* Edited by M. H. Henry, M.D. New York: F. W. Christern.

SKIN diseases have long attracted the especial attention of physicians, and treatises upon this particular branch of medicine, representing the views of the special observers of other times and their schools, have come

down to us in greater number than other specialties of equal rank in modern medical science can boast. That dermatology has such a past, however, has been its greatest misfortune; for the accumulated errors of successive generations of writers, skilled in nothing deeper than surface pathology, and of theorizers, whose ardor has been shown rather in defending doctrines, the products of their imagination, than in studying the natural history of disease, have been an incubus upon its progress. Were the literature of skin diseases previous to that of the last half century absolutely annihilated, and with it the influence it has exercised upon that of the present day, it would be an immense gain to dermatology, although much of real value would perish. Indeed there seems to have been something unique in the method followed by nearly all writers on these diseases until recently, which prevented all independent observation, and made a description of any single affection, untrammelled by comparison with that of other authors, an impossibility. Another peculiarity, which has characterized its whole history, has been the apparent inability to study them without the aid of a so-called system of classification, which seems to have been held as essential to their interpretation as the Rosetta stone in the study of the unknown character-writing; and each successive writer has given a large share of his work to the correction of those which have preceded, or to the invention of a new one. A clear, fresh book on skin diseases, devoted to close description of their appearances and course, with a record of the existing knowledge concerning their anatomy and etiology, and containing a therapy based on large observation alone, unmuddled by theories, a book such as has been written about the affections of all other organs, is a rare thing in the past or present of medical literature. In these days especially, when many times too many books are written in all departments of medicine, it would be better for her if no man were allowed to write another upon skin diseases, except he had something to communicate new or better than what has already been said by others. This special fitness can be attained only by him who has had large and long-continued opportunities for observing all the diseases about which he writes, who is thoroughly acquainted with recent advances in pathology, general and special, who is familiar with the opinions of other observers of all times and countries, and is able by the test of a wide experience to select the false from the true, so that error shall be no longer perpetuated. Such a work only a great master in dermatology can write, and of such a century sees but few.

The separation of diseases into distinct divisions on anatomical grounds, for purposes of improvement in methods of study and treatment, and the recognition of such division of labour under the name of specialties by the profession throughout the world, has largely stimulated the production of books, and for two reasons. The consequent creation of special departments in connection with all large hospitals and schools, and the reputation for superior skill in treatment which soon attaches to those devoted to exclusive practice, diverts the management of these diseases almost wholly into the hands of a few, and thus gives them enlarged opportunity for observation, which by sufficient cultivation yields, to those properly fitted to receive, a knowledge worthy of publication; but it also leads men, mainly desirous of success in practice, to write themselves into notice of the public in connection with their specialty. With these increased advantages for acquirement, it is evident that we have a right to expect better treatises on special subjects than ever before, and that, with competent

observers in many parts of the world, there should be no demand for the book-work of the latter class.

Thus, of the many books on skin diseases, published within the last few years, some are of little value except to their authors as advertisements, as they contribute nothing to our previous knowledge that is reliable; others are largely controversial in character, written in defence of personal theories respecting the pathology or nomenclature of some particular disease; while but one or two only contain the recorded observations of master-minds in the whole field of cutaneous medicine. But if we thus raise the standard of authorship, and limit the making of books to these few great leaders in dermatology, it may be objected that all recent advances in this field would be given to the general medical world only at long intervals through the press, or only gradually spread outwards from their lecture-rooms and clinics. But this objection is no longer valid, if indeed it ever were, and the man who has a new theory with regard to the cause or nature of some one affection, or the student who has made honest and trustworthy investigation in connection with the anatomy or treatment of another, can no longer, in these days of numerous periodicals, make his desire to announce these particular views to the world the excuse for publishing a book covering the whole field of dermatology, which must be in great part made up of the opinions of those whose writings are accessible to all first hand. Moreover, the establishment of special journals of dermatology in all the great centres of medical science, within the last two or three years, has afforded an open channel of communication between the observer in this department and the profession generally, through which opinions and theories, or the results of accurate investigation, however general or limited in their scope, may be made known without delay. Thus is furnished opportunity to the general practitioner of making known important information, which might otherwise be kept from the public; to the young specialist, of publishing monographic chapters of exceeding value, the results of skilled and well-directed investigation; and to the already famous and acknowledged master, of announcing changes in views or additions to observations previously recorded in his books. Such has been the nature of the contents of these journals of cutaneous medicine in Germany, France, Italy, Great Britain, and America, and although they are of very unequal value when compared with each other, they have all contributed somewhat to the advance of dermatology. Another new feature in the literature of cutaneous diseases is the publication of separate books on single affections, mainly intended by the authors, although issued independently, as chapters of a future and complete work on the whole subject. Some of these have swollen to a monstrous size, and if pricked of their verbiage, personal conceit, and whims, and stript of their ridiculously arbitrary and undemonstrated theories, would dwindle to the reasonable limits which a simple record of facts and justifiable deductions alone require.

In connection with the critical examination of the books mentioned at the head of this article, or of other recent works on skin diseases, it may be well to consider, even in a brief manner, the most striking characteristics of the respective schools they may serve to represent.

In England, dermatology has until the last decade remained almost unaltered from the time of Willan, its founder, though subject to periodic changes from the ever-fluctuating doctrines of Mr. Wilson. Few writers in medicine have ever produced so many editions as he, certainly no one as many so unlike; and this variation consists mainly, not in the constant and

rapid development and announcement of new facts, but of fancies. Every one is familiar with the system of classification of Willan, and it is wonderful to trace the influence which he has exerted upon nearly all who have since written upon this class of diseases; for so great was the step which he took in his time in individualizing symptoms and appearances, and in clearing away the rubbish which centuries had heaped upon the study of these affections, and so easy to follow was the method he introduced of classifying disease according to its external and momentary aspect alone, that his views until recently have been almost universally accepted, as if so great a progressionist could not possibly have founded a false system. Now Mr. Wilson has attempted to found, among others, a classification upon an anatomical basis, according to the particular part of the skin affected, as if diseases of the integument were confined to any one structure, and did not often extend to all its tissues, so as to make it impossible to determine which are the most affected. We find accordingly that although he has divided cutaneous affections into two primary groups, namely, diseases affecting the general structure, and diseases affecting the special structure of the skin, still all the common and important diseases are arranged after the method of Willan under the following groups: exanthemata, papulæ, vesiculæ, pustulæ, bullæ, and tubercula; and this, too, after admitting that erythema, lichen, eczema, impetigo, and psoriasis not only occur in conjunction with, but are really convertible into each other. The absurdity of such an arrangement seems apparent to himself, for he states that although the above diseases "are in their fully developed state strikingly dissimilar, yet in their pathological nature they may be and are essentially the same;" as if it were not pathology which should guide us in the study and classification of disease. To classify diseases of the skin according to the form of eruption they may present, or even to group them upon the same plan, although their pathological unity be tacitly admitted, for the sake of rendering diagnosis easy or of conforming to ancient custom, is only perpetuating error. There is no such thing, generally speaking, as a papular disease, or a vesicular disease, or a pustular disease, as such alone. Many of the affections to which the skin is liable may exhibit at some period of their course, or be characterized by, maculæ, papulæ, vesiculæ, pustulæ, or squamæ. It is because such a narrow definition is adopted that he is obliged to call the same individual pathological process on one day strophulus, on another pityriasis, on another lichen, on another eczema, on another psoriasis, and on another impetigo.

But Mr. Wilson has also founded other systems quite unlike this, so that it is impossible to say precisely which of his several plans he himself prefers, or that they may not all be discarded to-morrow for a new one. The very latest proposed occupies a prominent part in the last of his publications, which stands first in the list of works above given. In this, after a review of the systems of others, he is led to believe, in consequence of the fact that eczema occurs in the ratio of nearly thirty-four per cent. of all skin diseases, or as he chooses to express it, "the practitioner who knows eczema alone, already knows one-third of all the diseases of the skin" (although he has previously stated that they are eighty in number), that it should be made the standard of cutaneous medicine, and that a classification founded on this idea would be practical. Hence the "clinical classification became a necessity of his organization." It arranges cutaneous affections under the following groups: A.—1. Eczematous. 2. Erythematous. 3. Pemphigous. 4. Furunculous. B.—5. Neurotic. 6. An-

geiomatous. 7. Hæmatic. C.—8. Allotrophic. 9. Alphous or leprous. 10. Strumous. 11. Carcinomatous (or karkinomatous, as he spells it). D.—12. Zymotic. 13. Syphilitic. 14. Elephantoid. E.—15. Chromatopathic. 16. Dermophytic. 17. Onychopathic. F.—18. Trichopathic. 19. Steatopathic. 20. Idrotopathic. G.—21. Traumatic.

"You will observe," he says, "that we have divided our twenty-one groups into *seven* collective groups or families, of which A represents simple inflammation of the skin; B, affections of component parts of the skin; C, disorders of nutrition; D, blood-poisons; E, affections of epidermis; F, affections of the appendages of the skin; and G, injuries of the skin. The groups are all pathological, and several enjoy the advantage of being homœopathic."

Now such an arrangement is wholly unscientific. It is a jumble of all sorts of systems, in which superficial resemblances unite diseases otherwise entirely unlike; in which affections closely allied pathologically are widely separated; and in which arbitrary and unsubstantiated theories of causation play an important part. The writer of this article has within the last seven years had occasion to notice critically two of the editions of Mr. Wilson; and yet, and notwithstanding this very late announcement, feels quite unprepared to represent the existing status of his creed. Nor is it alone in respect to systems of classification that this seeming spirit of dissatisfaction with himself shows itself. No writer has done so much to increase the unfortunate confusion which exists in connection with the nomenclature of cutaneous diseases as Mr. Wilson, and he has never let slip the opportunity of introducing new and of altering old names in his writings. In his latest editions, and in the numerous articles published in his journal of cutaneous medicine, this propensity to invent long Greek titles, or to hunt up others forgotten for centuries, and never used with any definite meaning, amounts almost to a mania. To put together his views published from time to time upon many points would form a very interesting chapter in medical literature; and among the most amusing of these exhibitions, and a fair illustration of his whimsical mutability, is that afforded by the list of names adopted by him at different times in connection with psoriasis.[1]

In his volume on Eczema we find that he recognizes six essential varieties: erythematosum, papulosum, vesiculosum, ichorosum, pustulosum, squamosum; and ten sub-varieties: marginatum, fissum, mucosum, scabidum seu crustaceum, œdematosum, tuberculosum, spargosiforme, sklerosum, verrucosum, neurosum; the former based, as will be seen, on stages of development of the efflorescence. Now the folly of this fashion of some dermatologists, of dividing one simple disease into many varieties according to the particular form it may assume at various stages of its progress, cannot be too strongly insisted upon. It is the chief cause of the imaginary difficulties which surround the study of this branch of medicine, and only gives rise to confusion. Each new writer seems to think it his duty to invent new names for new varieties, instead of directing his efforts, where they are most needed, towards progress in pathological anatomy and treatment; apparently ignorant of the great truth that perfection in all classification is simplicity. Under psoriasis, for instance, we hear of P. punctata, guttata, alphoides, nummularis, scutellata, orbicularis, annulata, circinata, vulgaris, gyrata, circumscripta, diffusa, confluens, discoidea, centrifuga, imbricata, figurata, inveterata, and so on indefinitely. Now it

[1] See Boston Medical and Surgical Journal, May 6, 1869.

would be quite as sensible to take a photographic picture of every individual case, and label it according to the surname of the patient as a distinct variety, as to make use of the above system of nomenclature. There were never two cases of psoriasis or eczema exactly alike, and in every case we may find several of the appearances present at the same time which have been described as separate varieties, or else succeeding each other, so that we neither know which of the names is the most appropriate, nor but that our choice to-day may be a misnomer to-morrow. Or look at the terms employed by Wilson in his work intended expressly for students in the chapter on Pigmentary Affections: chromatogenesis, melanopathia, melanoderma, melasma, xanthopathia, cyanopathia, achroma, leucopathia, leucoderma, leucosma, fuscedo cutis, nigredo cutis, dyschroma, flavedo cutis, maculæ lutæ, lentigo, ephelis, chloasma, morphœa, besides a great number of specific names. Now this may be a fine way to display one's knowledge of Greek and Latin, it certainly is no way to teach the rudiments of dermatology. The terms really needed in the nomenclature of these affections are very few, and if no more were employed than distinct processes exist, their number would be still less. What we would insist on is the abandonment on the part of dermatologists of the idea that the affections of which they write are in any way an exception to diseases in general with regard to nomenclature, or that each day's change and the difference in appearance of two contiguous or remote square lines of skin require a distinct label in a foreign tongue.

Not only does Mr. Wilson exaggerate the importance of mere stages of metamorphosis of one and the same individual pathological process, by elevating them to the rank of varieties, but he goes further, and separates mere differences in the forms of this affection into distinct diseases, viz., lichen and impetigo. It cannot be said that he was the first to do this, as it is a very old error in classification, but that he should be the last to perpetuate it, in view of our present knowledge of the protean character of eczema, and of his own previously expressed opinions upon this subject, is to be regretted. Of the former, lichen, he gives ten varieties, but of impetigo he has very little to say. If we look for a strict definition of them, we find him saying in his last work: "Eczema, as we have seen, is characterized by several pathological lesions, of which two are papulation and pustulation. Lichen and impetigo represent these latter lesions when they are present alone—lichen is a papule, and impetigo a pustule." Now, with the exception of the rare affections described by Hebra as lichen exudativus ruber and lichen scrophulosorum, it is doubtful if there is really any distinct affection of the skin which deserves this name, and which might not be more correctly placed under the head of eczema or elsewhere. Of his ten varieties, the greater part are merely forms of eczema. Even his own opinions, elsewhere expressed, show how impossible it is to keep these affections apart.

"The difference between eczema and lichen," he says, "is not one of cause, but of manifestation—the difference of manifestation being chiefly due to difference of temperament and sex. Eczema is never present without lichen, and only becomes eczema when the vesicles are in excess over the papules. Eczema may also have a mingling of the pustules of impetigo, or the ichorous contents of its vesicles may become purulent; in either case it ceases to be simple eczema, and is then eczema impetiginodes. Impetigo is, in fact, a pustular eczema, just as eczema is an ichorous lichen, and the latter a papulous erythema."

In connection with the assigned causes of eczema we find the same looseness of reasoning which characterizes the consideration of this topic

in all Mr. Wilson's writings. Among those mentioned as capable of giving rise to it are twenty-five of the most dissimilar character. This list is in addition to the well-known exciting causes, cold, heat, irritants, etc., which satisfy most other dermatologists. A sample of the same kind of reasoning may be found in his chapter on acne in his general work, where he assigns its predisposing causes in one hundred cases as follows: "Rapid and overgrowth; congenital weakness; anæmia; deficient and improper diet; errors of air, exercise, and general hygiene; nervous debility; mental application and study; scarlatina; fever; deranged menstruation; eczematous diathesis; rubeola; dyspepsia, rheumatism, chill, syphilis, variola, vaccination, strumous diathesis, hemorrhage, abscess, depressing climate, and climate of India." The very fact that so many and so various causes are assigned for the production of one pathological process shows conclusively that they were not causes, only coincidences, the number and variety of which could be indefinitely increased by the history of another and another hundred cases. It would be just as logical to put down fractured thighs on this list, because one might go into the wards of a hospital and find a patient with this injury whose face was covered with eczema or acne.

There is little else in the volume on eczema worthy of special notice here, as, with the exception of the change in spelling and theories, which we may confidently expect in his successive publications, there is little that is fresh and may not be found elsewhere in his general works.

These traits in a writer who has played so important a part in dermatology, and who was elected to a professorship lately created in the Royal College of Surgeons, are perhaps worth this somewhat disproportionate notice, as, not only in his own country, but in ours as well, up to within a short time, he has been regarded as the best or only teacher in this branch of medicine. The translation of Hebra's work by the Sydenham Society, and the writings of Hillier and Anderson, his pupils in England, have, however, within the last few years, changed professional opinion in respect to these matters, and made known the simplicity and depth of the great German master's teachings. The more recent publication of the independent works of Fox and Hutchinson has also contributed largely to introduce these broader views on dermatology, and although, taken as a whole in its national aspect, it can be hardly said to possess a very distinctive character, it has excellent observers and writers of value in the gentlemen above mentioned, and in Dr. Fagge, the translator of Hebra.

The recent Lettsomian lecture of Dr. Fox, on eczema, for instance, is in marked contrast to the monograph we have been considering, inasmuch as in sixty-eight pages there is to be found an excellent and sufficient description of the natural history of the disease, with some very judicious rules for treatment, admirable in minuteness of detail, and for discrimination as to time and method of their application. Room is found also for quite a long discussion of the correctness of Willan's doctrine with regard to the nature and lesions of eczema, and of Hebra's well-known interpretation of it, as well as of his own opinions concerning them. Dr. Fox seems to have given hardly a fair representation of the teachings of the latter, however, and to lay far too much stress upon the individuality of Hebra's varieties, making the author apparently believe just what he, in fact, mainly labours to disprove—that these so-called varieties have any distinct existence, except in the artificial schemes of various writers. Dr. Fox shows also, in connection with the morbid anatomy of the disease, that

he is familiar with the labours of the new school of dermatology, as we may call it, which has its home, as we shall see, in Germany.

The establishment of journals specially devoted to dermatology, within the last few years, marks, as we have said, a new era in its literature, and to these we should naturally look for the record of its latest and highest progress. The *Journal of Cutaneous Medicine* was founded in 1867, by Mr. Wilson, and was continued in quarterly numbers until the end of 1869, when it ceased. Later, in the past year, it was resumed under the editorship of Dr. Purdon, of Belfast, considerably diminished in size. It has been, on the whole, a valuable publication; for, although characterized by a preponderance of Mr. Wilson's writings, and tinged rather too uniformly by editorial prejudice and egotism, it has also contained many original communications of value from other English dermatologists, and in its "Miscellaneous Memoranda" has presented quite a general, though brief, epitome of the state of dermatology in other parts of the world. It has, moreover, always been entertaining, even in parts not particularly instructive. The later numbers, under its new management, it seems to us, have fallen off materially from its original standard of merit.

In the modern French school there has been little progress or change during the past fifteen years. The works of Hardy and Bazin, its foremost men, already ten or more years old, are still a fair representation of its peculiar features and of its scientific merit. Any change in its tenets within that period has been mainly in the direction of exaggeration of its most striking faults. It has done little of late for the etiology or pathology of skin diseases, and is a poor field, we judge, for the special student of dermatology in comparison with some other European schools. The general stagnation which now so long broods over the École de Médecine, rests also upon the Clinique of Saint Louis. Both these writers maintain, in accordance with the teachings of their predecessors, the entirely arbitrary doctrine that some of the most important pathological processes of the skin are but the expression of *diatheses*. They recognize accordingly, among others, a diathesis dartreuse or herpetic, which manifests itself upon the skin, they say, by lesions differing in their elements, not contagious, often hereditary, reproducing themselves in a nearly constant manner, accompanied by itching as their subjective symptom, disposed to spread, chronic in their course, and healing without scars, though sometimes attended by ulceration. In this class they include lichen, eczema, psoriasis, and pityriasis. Eczema is a moist dartre, psoriasis is a dry dartre. Now it is perfectly proper to invent a general name in an artificial system of classification, and to group under it as many affections as their common appearances will allow, but it should always be remembered that such systems are founded upon resemblances, and not upon affinity in anatomy or pathology. Such systems may be excusable, perhaps, on the ground of convenience, however unscientific, but they should never be allowed to influence us in our judgment of the real nature of the diseases included under them. We have no evidence of the existence of any such vice of the economy as this so-called dartreuse. We might invent twenty imaginary diatheses, and no one could prove their impossibility; but it is entirely unphilosophical to apply an arbitrary name to a group of distinct pathological manifestations, and then explain their occurrence by the very ideal cause of our own creation. Bazin goes still further, and to the scrofulous, syphilitic, and dartreuse he adds a hypothetical arthritic diathesis, which with him plays an equally important *rôle* with the dartreuse in

the production of cutaneous affections, so that instead of one eczema and one psoriasis, we now find well-marked forms of each described under separate divisions in his books. Processes such as rheumatism and gout being well known, we can attach some meaning to the so-called arthritic diathesis, although there is no possible connection between them and psoriasis; but most of us are not the possessors of a physical sense which recognizes the existence of a dartre.

Yet both these authors have contributed in certain directions important additions to our knowledge of skin diseases, and Hardy's book is marked by a broad simplicity in description and classification, which would make it a very valuable manual, as far as it goes, for the student, were it not for this unphilosophical system of diatheses. In respect to therapeutics, like all modern French writers on these diseases, it is very deficient in practical detail, without which directions for treatment are of comparatively little use. It is not enough to say of a remedy that it is good as an application in this or that affection; it is also necessary to state particularly in what stages it should be used and in what manner applied, for that which in one stage may be very beneficial, may in another of the same affection produce no effect; and what is easily borne in one, may in another of its phases aggravate rather than benefit. It is only by the most minute attention to this detail that many of the most common and harassing skin diseases can be successfully treated, and no book is all that it should be in this important particular without such discrimination in its therapy.

Bandot's book is written confessedly in support of Bazin's peculiar doctrines, and therefore represents the most extravagant views of the modern French school upon the inner nature of cutaneous affections. The pupil's book is better than his master's, because more concise, and therefore more valuable to the reader who feels bound to make himself familiar with all the phases of dermatology; but he will look in vain for evidence of work in the right direction, such investigations as science now requires shall be carried out in all departments of medicine, conducted by the exploring senses and for the acquisition of truthful data. Mere intellectualism, unsupported by such kind of research, which results either in compilation, or worse, theorizing, will no longer, we trust, be accepted as fit qualification for authorship.

As with the English journal, so we must look upon the French as an index of the present state of dermatology in France. The *Annales de Dermatologie et de Syphiligraphie*, edited by Dr. A. Doyon, is a bi-monthly, and has just finished its second year. It bears upon its title-page a long list of "collaborateurs," most of whom, however, are distinguished for their knowledge of syphilis, and among the thirty-four names but four only are well known as dermatologists. As was anticipated, therefore, it has been almost wholly devoted to syphilography, and in relation to this branch alone has anything new or very valuable appeared in it. In the last volume there is but a single article which has a bearing upon diseases of the skin. The editor is the translator of Prof. Hebra's work into the French, and his management of the journal has been free from all sectarianism or national prejudice. Its perusal only too sadly confirms, however, what we said above of the complete stagnation of dermatology in France.

Where, then, shall we find that progress in dermatology commensurate with the immense advances which the last few years have recorded in the history of other special departments of medicine? It exists; and if we

turn to the home of modern medical science we shall find that in this field, too, there has been no lack of workers. Germany has had even in past times not a few independent observers, whose works never exercised the influence upon the medical world in general to which they were entitled, for want of translation, among whom may be mentioned Fuchs, Simon, and Bärensprung. It was not until the intelligence began to spread, slowly borne by word of mouth from country to country, that in an imperial city of Germany there was a man teaching skin diseases as they had never been taught before, with unlimited means of clinical illustration, with the keenest eye for observation, with an unbounded amount of information drawn from many years of experience, with a self-restraint which no desire for premature fame could tempt into hasty publication, and with a sound and logical mind—that the German school of dermatology, some fifteen years ago, began to be known, and to advance to that pre-eminent position it now holds. Since that beginning, Prof. Hebra's book has been given to the world in part, and his doctrines, now familiar to all, are almost universally accepted with that credence and respect which only a great master can command. Its scientific and sensible system of classification, its simplicity of nomenclature, its brief and lucid description of diseases, its exposure of false theories both professional and popular, and its admirably clear and minute directions for treatment, make it, with its unparalleled wealth of original observations, a work which must long remain the first and greatest on dermatology. It has left, however, comparatively little to be done in the same line of clinical study by the many shrewd students whom its renowned author has created, and their craving for fresh fields of research has led to the development of a new science, so to speak, by them, which will largely form the dermatology of the future.

Prof. Hebra's system of classification is founded, as is well known, on a pathological-anatomical basis, and in accordance with the doctrines of Rokitansky's school. In the introductory chapters of his work, which was revised by himself for the English translation only four years ago, he states that he has found no reason to change this scheme first proposed in 1844, although his experience has been enlarged by the observation of more than eighty thousand cases of cutaneous disease since that time. "Not," he says, "that by any means I wish to declare my system free from faults, or that hereafter no better one can be devised, for I know only too well its failings and defects. It has, however, according to my conviction, the preference upon the ground that, being according to art (*künstliches*), it is still not artificial (*gekünsteltes*), and although it is no natural one, still it must be called one conformable to nature, inasmuch as it arranges together the skin diseases corresponding to each other in point of nature and character, and undertakes no arbitrary separation of allied affections." His twelve classes represent no doubt all the possible pathological processes of the skin, but one or two are certainly superfluous, and others may yet have to be redistributed, when the discoveries of very recent observers in this field of pathological anatomy shall have been more fully confirmed. The system, as it stands, is comprehensive, and represents the general or gross views of the renowned founder of its school, but it gives us but little insight into the minute or real nature of many of the processes it recognizes. But pathological anatomy, under the more searching and minute system of investigation introduced by Virchow and his school, has become quite a new science of late years, and a system of classification based upon

it must necessarily conform to the developments made since Rokitansky wrote.

Although Simon's book was published twenty years ago, and was written with special reference to the anatomy of skin diseases, the methods of investigation at that time were so incomplete, compared with those of to-day, that it gives us very little definite knowledge except with regard to the gross character of the pathological changes of the tissues involved. It is only within four or five years, and since Prof. Hebra last wrote, that the new way of studying morbid growths, by fine sections of the parts in situ and by the aid of various artificial processes, has been applied to cutaneous pathology, and has enabled us to approach the true basis of this system of classification. Hereafter it will not suffice to say of some of the most common and important affections of the skin that they are "exudative" processes, for example. That term has hitherto conveyed a very general and indefinite meaning, applicable rather to gross appearances and characterized by certain forms of efflorescence, whereas we have known little or nothing of the anatomy of the individual lesions we have referred to as establishing the anatomical character of the general process thus named. It is evident, therefore, that we cannot speak of the anatomical nature of such a process as exudation, until we first have made ourselves familiar with the nature of the individual lesions or surface appearances, and then of the other changes of all the tissues which accompany the special disease of the skin included under such class.

To the acquisition of such knowledge many of the younger dermatologists of the Vienna school especially, satisfied, as we have said, that in the way of clinical observation their leader has left them but little to do, have largely devoted their time of late, and the fruits of their labours are already apparent. It is to the consideration of these investigations, which may be said to constitute modern advance in dermatology, that we purpose to devote most of the rest of this article. These may be found published in three different forms, namely: incorporated in some general works on skin diseases lately published; in certain journals and proceedings of societies; and in monographs. We have already said that Dr. Fox, in his recent volume on eczema, had made mention of certain of these investigations connected with the pathological processes of that affection, but the only book which has given them general consideration is that written by one himself a worker in this field of research—Dr. Neumann, a former assistant of Hebra, to whom the book is dedicated. As might be anticipated, therefore, its doctrines are mainly those of his distinguished teacher, although published in a condensed form. It is on this account and for two reasons especially valuable: first, because half only of the great work of Prof. Hebra has yet appeared, and his views in relation to a large and important portion of skin diseases will remain unknown, therefore, to the profession generally, for an uncertain period in the future; and secondly, when finished it will be so comprehensive and inaccessible to general practitioners, that a condensed *résumé* of his views will be greatly needed. The book is divided into a general and special portion. The first contains a description of the anatomy of the skin and its appendages, of the various forms of eruptions or lesions it exhibits, and chapters on diagnosis, etiology, therapeutics, and classification. In the second or special portion the individual affections are arranged under the twelve classes of Hebra, and described in a simple and condensed style, but yet, with some exceptions, at

sufficient length to answer the purpose of a text-book for the student and a handbook for the practitioner.

Since writing this, the second edition of Dr. Neumann's book has appeared, increased from 352 to 407 pages, and enriched by many wood-cuts, numbering in all sixty-six, most of which are beautifully executed figures, drawn from the microscope, of sections of the skin in its various diseases. It is this feature which distinguishes the book from all others, and forms so large a part of its value. The new matter relates mainly to the minute anatomy of the skin in health and disease, and it may be considered the only book which in any way represents our present knowledge of this essential part of dermatology. But, although the author has published in full detail his own special investigations, he has not, we think, given us as full or as general a description of the labours of others in this direction as the importance of their observations in many cases deserves, or as we should have expected. For a satisfactory account of these, we must refer, therefore, to the original and various sources of publication. Some portions of the book have been rewritten, but the changes generally are more verbal than material. More might have been done, also, in amending some of the marked faults of the first edition; several important affections receiving by no means their due share of attention, while others are proportionally overdone, for a manual of its size and aim.

The author throws aside Hebra's classification, which he followed in his first edition, and introduces one of his own, which he considers a simplification of his master's. It consists of nine classes: 1. Anomalies of secretion. 2. Inflammations. 3. Hemorrhages. 4. Hypertrophies. 5. Atrophies. 6. New growths 7. Anomalies of pigment. 8. Neuroses. 9. Parasites. The difference between the two is mainly in the substitution of the term inflammation for exudation, and which is made to include the first and fourth of Hebra, hyperæmiæ and exudationes. This renders necessary a different arrangement in the order of diseases in the two editions, but no marked change in their text; because whether we call this great group of affections inflammations, exudations, or catarrhs, matters little, until the questions relating to their morbid anatomy, now the subject of such radical discussion, are answered in some definite way, by the numerous investigators at work upon them.

The chapter on senile changes of the skin contains much of novel interest. The author recognizes several forms of retrogressive metamorphosis exhibited by the cutis. First, a fine and a coarse granular degeneration, scattered throughout, and taking the place of the fibrous tissue; the former giving a milky and turbid, the latter a greenish-yellow appearance to sections beneath the microscope. The second form he calls vitreous degeneration. The fibrous bundles of the cutis become entirely invisible, and are converted into a homogeneous mass resembling solidified glue. Nerves, vessels, and other structures of the skin disappear, and the whole cutis is shrunken and brittle. This change has been called hyaloid degeneration by O. Weber, and according to him it begins in the epithelial cells of the arteries. Subsequently the whole vessel becomes homogeneous and narrowed, and the process then affects the other tissues. The same change had been observed in the base of indurated chancres, and in the tissues of elephantiasis Græcorum, and accompanying a case of so-called amyloid degeneration described below. It occurs in the face skin of most persons after the age of fifty. Accompanying these changes in the cutis, which are unequally distributed according to locality, the epidermis and

its appendages likewise, are affected in a variety of ways, wart-like excrescences and horny transformations of its cells being observed. The fall of the hair is attributed to the degeneration of the papillæ, and the insufficient epithelial production. The hair-follicles shrivel up in their lower portions, and are converted above into mere outlets for the sebaceous glands.

The *amyloid* degeneration above spoken of was observed, according to Neumann, by Lindwurm and Buhl, in a unique case of hypertrophy and ulceration of the skin. The whole surface of the patient, a man of fifty-four years, was covered with a variety of efflorescences; small and large red spots, capped with scales; little and great wheals, somewhat elevated and red, also covered with scales; red papules thickly strewn upon infiltrated patches of skin; wart-like excrescences and rough epidermal growths; and ulcers of various sizes scattered over the body, made up a picture which in parts resembled several distinct affections, pityriasis, psoriasis, lichen ruber, ichthyosis, &c. An examination showed a great hypertrophy of the papillæ, not only elongation, but increase in size laterally, as if many were compressed to one. The capillaries were also greatly enlarged, and exhibited lateral projections. The most important discovery, however, was in the substance of the papillæ. These were filled with shining bodies, 0.008–0.01 mm. in diameter, arranged either in layers or without order. Their appearance and reaction with iodine and sulphuric acid left no room for doubt that they were to be considered so-called amyloid bodies. Beginning at the base, they reached their greatest number and size at the swollen summits of the papillæ. This discovery can hardly be looked upon as in any way pathognomonic of the gross and varied surface appearances in this peculiar case, but it is very interesting as establishing the possibility of a tissue-change in the skin, of general distribution, never before observed.

As above stated, we must refer to the original sources of publication for a satisfactory account of many similar discoveries in the morbid anatomy of the skin, which are too briefly alluded to in Neumann's book. Among these sources is first to be mentioned the *Archiv für Dermatologie und Syphilis*, published quarterly for the last two years by Drs. Auspitz and Pick, the former teacher in the University of Vienna, the latter at Prague. The great value and success of this journal were assured at its start by the character both of its editors and the distinguished specialists associated with them as collaborators, among whom may be mentioned Biesiadecki, Boeck, Hallier, Hebra, Köbner, Kohn, Landois, Neumann, Reder, Sigmund, Wertheim, and Zeissl. The promise which such names offered has been fully sustained during its existence, and articles of very great importance, by most of these observers, have appeared in its pages. But, in addition to such original contributions, it has presented in each number a review of the progress of dermatology and syphilis in all countries, arranged under appropriate divisions; so that one has only to consult its pages to inform himself of the latest advances in these kindred departments. Its management deserves the highest praise, and were it generally accessible, or published in our own language, the necessity of such articles as this in general periodical literature would cease to exist. In it may be found an account of much of what follows, relating to our subject.

Another very valuable repository of contributions to the literature of modern dermatology are the *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften* (proceedings of the Vienna Academy of Sciences). In

these have been published the observations of one of the most zealous workers in this new field of research, Dr. Biesiadecki, formerly of Vienna, now of the Krakauer Pathological Institute. Not only his own researches in connection with the anatomy of the skin in health and disease have appeared in these, but those also of several of his pupils, our own countrymen, made under his direction, upon the morbid anatomy of certain affections, to be mentioned hereafter. *Virchow's Archiv* has also contained many valuable articles in the same line of investigation during the past few years.

From among these we shall select for notice those which throw most light upon the formation of the various structures of the skin in health, and the changes of its elements in disease; and it will be seen that our knowledge of each division is aided by the study of the other; and that so little is yet established, even with regard to the former, that it is impossible to carry on investigations concerning it, without the suggestions derived from observation of its pathological modifications. Thus it will be impossible to consider them separately. It will be found, too, that the pursuit of these investigations leads into the region of questions which are foremost in the discussions of modern general pathology, and that, therefore, a wide difference of opinion prevails with regard to some of the phenomena recorded by the various observers.

In one of the most noteworthy of these contributions,[1] Dr. Biesiadecki, in an article on the structure and self-productive power of the healthy epidermis, publishes the following conclusions, as the result of the examinations there detailed: 1. That the formation of epidermal scales from the cells of the mucous layer begins with the shrinking of the nucleus of the latter. 2. That the mucous layer, besides the epithelial cells, possesses others more like the cells of fibrous tissue. 3. That these cells, originating from the tissue of the corium (wandering cells of Recklinghausen, leucocytes of Cohnheim), penetrate the mucous layer; and 4, that the youngest cells of the stratum Malpighii are developed from a nucleolated protoplasm belonging to the corium.

With regard to the pathological anatomy of the skin, he gives in the same article his observations upon several of its affections, and some of the most characteristic cutaneous manifestations of syphilis. In erythematous and phlegmonous *erysipelas* he found the whole cutis and subcutaneous cellular tissue infiltrated with cells, the two forms differing only in the greater abundance of these cells in the latter. All the layers of the corium and adipose tissue are filled with these cells, which resemble in shape and size the white corpuscles of the blood, and possess a protoplasm so filled with granular matter that the simple nucleus is scarcely visible. The fibrillæ of the fibrous tissue, within which these cells are most thickly imbedded, lose their sharp contour, increase in thickness, swell up, and change into a homogeneous mass. In this way an abscess is formed, situated generally in the tips of the papillæ. The individual fibres are pressed apart also by a fluid which permeates the tissues uniformly in addition to the cells. In the infiltrated portions of skin the bloodvessels are enlarged and their walls are sharply defined, while in the neighbourhood of the abscess their contour becomes lost, and a brown mass of altered blood only marks their course. The epidermal cells, in contact with the papillæ, and around the hair-follicles, are swollen by infiltration, while

[1] Sitzungsberichte, vol. lvi. part 2.

those of the outer layer of the sebaceous glands are enlarged, and the inner are converted into a pulpy mass. From these observations he concludes that in every erysipelas we have not only serous infiltration of the corium, as previously believed, but at the same time an abundant production of cells, which penetrate even the subcutaneous tissue, and thus explain the distension of the skin. The production of cells seemed to be no more active in the immediate neighbourhood of the bloodvessels than remote from them.

Passing by his interesting investigations upon the histology of syphilitic induration and condylomata, we come to his observations upon the formation of papules and vesicles in *Eczema*. Here the papillary bodies are the chief seat of the affection. They are found in circumscribed parts, widened and elongated in consequence of an infiltration into them both of cells and a clear serous fluid. Their fibrous tissue-corpuscles are also both enlarged and increased. The bundles are, moreover, pressed apart and swollen. The mucous layer above the papillæ is also affected. Numerous spindle-shaped cells are seen, partly within the latter, partly penetrated between the deepest cells of the rete mucosum. They press forward even to the horny layer. Between two papillæ, and within the mucous layer, these cells often form a thick network, penetrating it in various directions, within which the epithelial cells are found swollen. This circumscribed infiltration of the papillæ and mucous layer forms the eczematous *papule*. In the process of its transformation into a vesicle, the new cell formation within the papillæ increases, and the superficial cells of the mucous layer become considerably swollen, and perhaps burst, so that the epidermis above them is lifted up. The cells of the middle layer are still more distended, or clouded as if filled with dust, and their enlarged nuclei are scarcely discernible. The spindle-shaped cells, which are supposed to act as juice-canals for the nutrient matter of the mucous layer, are found in increased numbers and thickened, and form a dense network within it. With the greater abundance of these cells, a more profuse quantity of the fluid which penetrates the papillæ is carried to the mucous layer, and at times in such excess as to elevate the epidermis in the form of a *vesicle*. In case the epidermal covering is removed, the fluid oozes out upon the surface of the mucous layer, and we have a moist eczema. It is through the medium of this network of spindle-shaped cells that exudations within the papillæ are enabled to penetrate the mucous layer and reach the surface.

The formation of vesicles has, since this article was published, been further investigated by Dr. Biesiadecki, and by Dr. Haight, of New York, under his observation, and the results obtained by them may find most appropriate mention in this connection. In the *Sitzungsberichte*,[2] the former communicates his observations on this process produced by burns of the skin. Here, too, even in scarcely visible elevations, the papillæ were found broader and longer, and the bloodvessels enlarged. Above them the epidermis was elevated, and on its inner surface was attached a layer of shrivelled epidermal cells, while between it and the exposed upper surface of the corium were stretched thin threads. These threads were of the same breadth and shape throughout their entire length, and exhibited by the strongest magnifying power nothing resembling elongated nuclei. They were less numerous between the epidermis and the points of the papillæ

[1] Vol. lvii. part 2.

than in the depressions between the latter. Where the epidermis was elevated by a more abundant serous exudation, there were seen upon its inner surface, as well as upon the upper surface of the exposed corium, numerous such threads torn apart and extending into the cavity of the vesicle. Between these threads there occur also club-shaped, cell-like objects, attached by means of long and thin projections to the papillæ, and containing a more or less easily recognizable nucleus. It appears, then, that in burns of the first degree, when the heat is applied to the skin the bloodvessels of the part are first enlarged, which is followed by an almost instantaneous serous exudation. This exudation penetrates the tissues of the cutis and reaches the mucous layer, where the epithelial cells, which are firmly attached to the upper surface of the corium, are drawn out and finally elongated to thin threads, in which the former nucleus is perfectly invisible. This happens all the more easily, as the exudation cannot penetrate the horny epidermal layer which is composed of flat cells, but must lift it up, and inasmuch as the youngest cells of the stratum Malpighii are quite firmly attached to the corium, they are pulled out lengthwise more and more by the rising epidermis. The following conclusions are drawn from these observations: 1. That the cells of the stratum Malpighii take no active part in the formation of vesicles, inasmuch as it is impossible that, by any active process within themselves, the cells can elongate themselves to the point of laceration. 2. That the cells of the stratum Malpighii are favourable to osmose. 3. Such a change in the cells implies that they still consist of a soft and yielding kind of protoplasm, on which account only the lowér layer of cells is thus affected. How far this substance after death is capable of undergoing similar changes can only be determined by examination of blisters found upon the cadaver. 4. This investigation teaches, as is known, that vesicles, like pustules, may be divided into compartments, and that the partition-walls are composed of epithelial cells.

These investigations concerning the structure of the vesicle are confirmed by others, made and published in the same volume of the *Sitzungsberichte*, by Dr. David Haight. He examined the vesicles of herpes zoster, of erysipelas bullosum, of pemphigus, and sudamina. In the former they were separated by these bands of elongated cells into numerous compartments, according to the number of papillæ included, and the thickest of these bands, or seeming columns, always arose from the depressions between the papillæ. In connection with the pathology of zoster, Dr. Haight's observations, relating to the nerve-tissues of the skin, are very interesting. The wandering cells within the subcutaneous cellular tissue were collected in great numbers about the nerves there located, and the nerve-fibres themselves were swollen, the medullary substance dissolved, and the axis cylinder excentric. In erysipelas the vesicles had the same structure as in herpes. In pemphigus the blisters were simple, their cover being composed of the uplifted horny layer, while their base consisted of somewhat elongated cells of the stratum Malpighii, above which flat and nucleated epithelial cells were laid. In sudamina, on the other hand, both the roof and the base of the vesicle consisted of horny, unnucleated, epidermal cells. Dr. Haight's paper is most beautifully and clearly illustrated by plates of his microscopic sections, the artist being Dr. Heitzmann, to whom we are also indebted for the illustrations which accompany all the other articles published in the proceedings of the Vienna Academy, mentioned below, as well as for the excellent illustrations in Neumann's books.

How papules and vesicles are converted into pustules we shall learn by

returning to the first-quoted communication of Dr. Biesiadecki. The process in herpes zoster is first indicated by an increase in the number of the new cells throughout the papillæ, corium, and cellular tissue beneath. The bloodvessels within the papillæ are still further enlarged and crowded with corpuscles. The spindle-shaped cells shoot out from the papillæ into the mucous layer in greater number than in the vesicle, and the epithelial cells are forced apart by a mass of round cells, compressed and made to assume a position perpendicular to the horny layer. This process is most pronounced at the edge of a growing pustule; towards its middle a still more abundant round-cell proliferation is observed, and small collections of pus are seen in the mucous layer, inclosed within the partition walls, formed from the compressed and deformed epithelial cells of the middle and upper mucous layer. The epithelial cells of the lower mucous layer, on the other hand, take an active part in the process; they divide and are converted into mother-cells containing often several nuclei, which rest upon the depressed and infiltrated corium, forming the floor of the pustule, and extend at times into the compartment walls. From these investigations Biesiadecki draws the following conclusions:—

1. With regard to these cells which are found at times between the epithelium of the normal mucous layer, that when this layer is increased in size, as in the pointed condylom, they are found much more abundant and possessing numerous projections which anastomose with each other. That in acute processes, like eczema and herpes, they reach the mucous layer in increased numbers, and often form a thick network, penetrating as far as the horny layer. Further, that in the formation of pustules, these cells, in consequence of the abundant proliferation, force the epithelial cells of the mucous layer apart, which form the meshwork of the pustule. 2. In confirmation of the opinion that the youngest cells of the mucous layer are developed from the corium, he cites the ulcer in syphilitic induration, in which there is a gradual transition of the cells which cause the infiltration of the papillæ to the epithelial cells of the mucous layer, and the circumstance that, in all cases where thickness of the mucous layer results, an abundant cell-formation in the corium takes place. 3. Although, according to this view, the mucous layer receives its growth from the corium, it can also, by a division of its own cells within the middle layers, increase in thickness, as in the pointed condyloma.

In a communication to the Vienna Academy during the past year, it appears that Biesiadecki has carried his investigations upon the formation of vesicles still further, and made the regeneration of the epithelium a special study upon the web of the frog. The results are very interesting as bearing upon the question, now so much discussed, of the mutual relations of the epidermis and corium. These experiments show that this regeneration takes place in different ways and at different periods, according as the mucous layer is wholly or in part only removed from the corium, and whether the circulation of the latter is more or less disturbed. If the lowest row of epithelium is left over the corium, it is, in the majority of cases, removed by the exudation, although the cells occasionally remain in contact with the corium, and are finally converted into epidermal cells. If the whole mucous layer is removed from an uninjured corium, there follows in a few hours an inflammatory stasis in the latter, and about the sixth hour the *white corpuscles*[1] wander out from the bloodvessels, first into the tissues of the corium, and later out upon its upper surface. At

[1] It will be observed that Dr. Biesiadecki here, for the first time, makes use of this term to designate what, in his previous communications above noticed, he has called round and spindle-shaped cells, thus accepting their origin.

first it appears as if the cells were about to remove themselves from the corium, for they rapidly change their form, and remain attached to it only by means of a thread. They soon, however, spread themselves over the corium, become inactive, while their protoplasm appears more transparent and exhibits an oval nucleus within. In twelve hours the whole epithelial gap is covered with a row of such cells, which appear to be closely pressed together. Subsequently, this first emigration of cells is elevated by new ones deposited beneath them, and appears to be stiffer, more sharply defined, and somewhat flattened. In twenty-four hours many rows of these cells are to be seen, elevated in a prominence above the surface of the skin. At this period pigment-cells are to be found between the new-formed cells, which have penetrated thither from the neighbouring mucous layer, although they appear also to ascend thither from the underlying corium. If it should happen that an air-bubble comes in contact with the cicatrizing surface, and we should attempt to remove it by a drop of fluid, the departing bubble will often pull the cells out into long threads, in the same way as, in burns of the human skin, the rising epidermis pulls out the lowest epithelial cells into long threads within the vesicle. If the whole mucous layer is raised off the corium, and an extensive stasis of the blood follows in the latter, a necrosis of the exposed corium ensues, and on the seventh day demarcation is evident, and on the tenth the dead tissue is cast off. If the epidermal covering of the blister is not removed, its fluid contents, at first clear, become turbid by the collection in it of fat, light brown pigment-granules, and exudation-cells. The epithelium of the cover also contains fat-granules, while its pigment-cells send out numerous projections, which anastomose with each other and surround nearly every epithelial cell. In the neighbouring corium there are found, in consequence of collateral œdema, round or oval cavities containing a clear fluid, which might pass for enlarged lymph spaces or vessels. These are among the latest observations upon the regeneration of epithelium.

These relations of the cuticle to the papillary structure have received a new interpretation in an article of great interest and originality by Dr. Auspitz, of Vienna, in the *Archiv. für Dermatologie*, of which he is one of the editors. In opposition to the common belief that the papillary layer is formed by the shooting out of projections from the cutis, around which the epidermal cells group themselves, or by nipple-shaped outgrowths into the already-formed Malpighian layer, he ascribes to the latter the active rather than the passive part in the process, and maintains that the papillary boundary of the cutis is produced by the epidermis pushing forward conical projections into the opposing cutis. In support of this view, he offers the following reasons drawn from the study of the embryological anatomy of the skin: 1. The development of the epithelium of the skin and mucous membrane takes place entirely independently of that of the fibrous tissue, nerves, and vessels. 2. The formation of the papillary layer in the embryo begins at a period when the epithelium is already fully formed and arranged as in adult life, and when well-developed fibrous tissue and vessels distended with blood-corpuscles have existed for a long time. 3. The completely-formed epithelium grows into the fibrous tissue (mostly fibrous from the third month of embryonic life) in the form of projections, and forms thus the glands and hair-follicles. 4. In adults also, in certain cases, a pre-existing epithelial layer undergoes further development within the cellular tissue. Dr. Auspitz then goes on to consider the relation of the epidermis to the papillary layer in pathological

conditions, for aid in the solution of this question, and as the result of his detailed investigations, gives the following conclusions:—

1. In hyperæmic and inflammatory processes of the skin, succulence and swelling of the papillæ only result, but a real change in their form does not take place until after secondary changes in the Malpighian layer have been developed. 2. The same rule applies in case of simple and lymphatic hypertrophy of the stroma of the fibrous tissue, and in cellular infiltration of the cutis. 3. In keratoses or anomalies of the horny layer (corns, cutaneous horns, ichthyosis) there is either no change in the form and size of the papillæ, or it is caused by the pressure of the hypertrophied horny layer. The prismatic and columnar forms of the latter do not depend upon the papillæ of the cutis. 4. Papillomata (warts, condylomata, epitheliomata) are the result of an active process in the rete, as their character shows, in consequence of which a growing of the hypertrophied Malpighian layer into the equally more or less hypertrophied stroma results. The papillæ take but a passive share in the process, their elongation, as well as their dendritic shape, being produced by the hypertrophy of the epidermis, while the elevation of the whole surface of the skin is the result of the hypertrophy of both epidermis and stroma. 5. Spontaneous out-growths of the fibrous tissue upon the skin sometimes occur (as upon the mucous membrane), but depend, like the latter, as little upon the pre-existing papillæ as does the papillomatous form of epidermal covering which often occurs upon such fibrous tumours. 6. A real anatomical distinction between the individual forms of the papilloma, wart, pointed condyloma, and cauliflower excrescence does not exist, and the syphilitic condyloma differs from it only in the specific cell-infiltration of the cutis. 7. The epithelioma offers an exquisite type of the hypertrophic epidermal in-growth into the stroma of the fibrous tissue. 8. The results of examination of the morbid conditions of the skin agree perfectly with those afforded us by the skin and mucous membrane in their physiological state, and by the history of their development, so far as it is within our reach.

Intimately connected with this interesting theory, which has, of course, met with opposition, and upon which rests a burden of proof by no means wholly raised by Dr. Auspitz in his article, is the special question of the development and independent power of repair of the epithelium. Concerning this, histologists and the younger dermatologists have been especially busied within the last two years, and a very wide difference of opinion still prevails among them. Some maintain that the new growth of epithelium proceeds directly from the fibrous-tissue corpuscles of the stroma; others, that it results from the escape of the white-blood corpuscles from the vessels of the cutis, their conversion into and deposition as epithelial cells; others, that they are formed directly from the nucleolated epithelial cells by division, and endogenous cell-production; others, from a sort of germ-layer, situated between the epithelium and stroma of a plastic or granular character. The theories of two observers only will be here mentioned, in addition to the account of Biesiadecki's, above given.

Prof. Arnold, of Heidelberg, published in *Virchow's Archiv* for 1869 an account of a series of experiments undertaken by himself upon the skin and mucous membrane of dogs and frogs for the purpose of solving this question. He arrives at the following conclusions, which were satisfactory to himself at least: First, with regard to some of the opinions above mentioned; that the regeneration of epithelium proceeds either from the fibrous tissue, or from pre-existing epithelial cells. If it depends upon the former, it would necessitate the existence of small cells containing a nucleus, which would present the type of so-called formative cells, whereas not a trace of such exists. Just as little are processes to be discovered in connection with the epithelium situated at the epithelial border,

which indicate a division either of the substance of the nucleus or the cell. With regard to the amœboid cells, they were observed by Arnold to issue from the mucous layer, to undergo various modifications of form, and to tarry at the edge of the epithelium for a long time, without attaching themselves to it. A transformation of these wandering cells into epithelium, either in the process of physiological or pathological regeneration, he considers, does not take place, inasmuch as they undergo no such metamorphosis as would give them the character of epithelial cells. According to him, regeneration under pathological conditions goes on in the following manner: In places which have been robbed of their epithelium, the gap thus caused is filled either entirely, or at its periphery, with a finely granular substance, which appears cloudy, and by a strong magnifying power is seen to consist of molecules. At points where the epithelial formation begins, this is changed into a glassy material, which may be called protoplasm. In this phenomena of segmentation appear, and in parts thus furrowed, shining bodies show themselves, which later are surrounded by circular borders, until finally a positive nucleus appears. Thus are found, at the end of the process, small, granular, epithelial cells, containing still weakly defined nuclei, the subsequent metamorphoses of which are granulation of their contents, a more marked defining of the nucleus, and a growth of all the parts. In this way the formation of a layer of epithelial cells takes place, beneath which the same process is repeated, so that the youngest forms are always found in the deepest layers, directly upon the mucous layer. Inasmuch as Arnold recognizes the presence of the wandering cells in increased numbers during this process in the midst of the protoplasm and granular matter, and especially where the process of segmentation begins, he attributes to them the power of exciting the phenomenon. As to the source of this granular matter, which, of course, underlies the question of the independent regeneration of the epithelium, he is inclined to credit any of the other tissues with its production before the pre-existing epithelium, inasmuch as a new growth directly from the surface of the fibrous tissue is possible, although he will not deny the pre-existing epithelium a participation in the process.

On the other hand, and in opposition to the views of Thiersch and Arnold, we find in Dr. Pagenstecher also an earnest advocate of the doctrine that the wandering cells are converted directly into epithelium, not by independent action of their own, in which case granulating surfaces, where they abound, would be skinned over without the aid of pre-existing epithelium, but by some mysterious contact-action, or epithelial infection, as he expresses it. In the same way that the cells of malignant new-growths are believed to convey infection to cells hitherto unaffected by contact, so he believes that direct contact with epithelial cells is necessary for such transformation on the part of the wandering cells, and that Thiersch would have been justified by facts, if he had concluded that epithelium exists only when it can be developed in closest contact with already existing epithelial formations. In the *Sitzungsberichte*, vol. lvii., part 2, may be found the details of his experiments and the following conclusions:—

1. That these cells are found increased in all chronic processes accompanied by increased epidermic formation. 2. The same cells are found in the epithelial collections (balls, cylinders) of epithelioma. 3. They enter the stratum mucosum of the skin from the corium by independent motion. 4. In proof of the transformation of the wandering cells into epithelium, we have—*first*, their increase wherever an increase of epithelial cells occurs; *second*, want of evidence of their destruction, or of their organization otherwise, or of their transformation

into pus; *third*, the want of evidence of any other method of the formation of epithelial cells; and *fourth*, positive proof of the transitional forms between them and the epithelial cells.[1]

It will be seen, then, that, with this very wide difference in the opinions of observers and experimenters concerning these interesting questions, the opinions of non-observers in the matter can be of little importance. They must still be considered unsolved and open questions, the most plausible solution of which, nevertheless, it seems to us, is the doctrine of the constant escape of the white corpuscles, their transformation into epithelial cells, and their no less important share in the modified processes of the diseased skin.

In connection with these investigations of Dr. Biesiadecki, may here more particularly be mentioned the valuable contributions already alluded to of some of our own countrymen while studying under his direction in the institution of pathological anatomy in Vienna. These, although more particularly concerned with the changes of the skin in individual diseases, and therefore possessing less general interest than the widely applicable results of the histological studies of their teacher, have a merit additional to their intrinsic excellence. This is a field hitherto untrodden by American workers, and the example of independent investigations in it by our own men, especially when attended by such meritorious results, cannot fail to be of great service to our students at home. Dr. Haight's observations upon the formation of vesicles in certain affections and upon the changes of nerve-tissue in zoster have been already noticed. In the *Sitzungsberichte*, vol. lvii., part 1, is an interesting article by Dr. William Young, also of New York, on the anatomy of œdematous skin. The conclusions he draws from his examinations are, that in this condition the fluid which causes it is found in cavities bounded by bands of fibrous tissue as well as by the single cells and fibres of the same; that these cavities occupy no particular position, and possess no boundary membrane composed of epithelial cells; that such cavities, moreover, are traversed by canals which are circumscribed either by epithelium alone or by a union of this and an elastic network. He believes that in the normal skin such cavities exist between its fibres filled with fluid which become distended in œdema; and that they are pre-existing lymph-cavities connected in some undiscovered way with the regular lymph-canals. As a possible means of such communication, he calls attention to the larger stomata existing between the epithelium of the lymph-vessels in comparison with those of the blood-vessels.

Dr. William W. Geddings, of Aiken, S. C., contributes to vol. lvii. of the *Sitzungsberichte* his investigations upon the anatomy of lupus erythematosus. In character the pathological changes in the tissues in this affection do not differ from those which are seen in lupus vulgaris, but Dr. Geddings discovered an anatomical difference in the seat and beginning of these tissue changes, which explains the dissimilarity in the gross appearances and clinical history of the two diseases, and confirms the views first adopted by Hebra concerning its nature, and justifies the name he first gave it, seborrhœa congestiva. A study of its anatomy shows that it takes its origin from the sebaceous glands, the bloodvessels surrounding them being found enlarged, in consequence of which serous exudation in the neighbouring cellular tissue ensues. As the disease progresses, the hyperæmia and exu-

[1] See Biesiadecki's latest observations, *supra*.

dation extend along the hair-follicle into the papilla, whereby the surface changes are produced. Cells are next observed, at first about the enlarged sebaceous glands, and then around the hair-follicle and in the papillæ, above which the stratum Malpighii and epidermis increase in thickness, and over which the latter remains attached in the form of fatty scales. In common lupus the anatomical changes do not start from the sebaceous glands, and are never more marked there than elsewhere. Dr. Geddings' valuable investigations will be found in full, together with some later observations and an interesting clinical history of the affection, in an article upon it in the July number of this Journal for 1869. In the *Archiv für Dermatologie und Syphilis* may also be found a valuable contribution to our knowledge of this affection, by Dr. Kohn, of Vienna.

In the same volume of the *Sitzungsberichte* Dr. J. Collins Warren, of Boston, publishes the results of his examination of the anatomical nature of true spontaneous keloid, of so-called false keloid developed from a previously existing cicatrix, and of ordinary scar-tissue. In the development of true keloid he found in the beginning the round cells appearing in great numbers in the adventitia of the vessels of the corium, which became spindle-shaped, and were converted finally into fibrous tissue. In this way, the larger bloodvessels being surrounded by constantly growing layers of fibres, the tissues of the corium situated between them become compressed, until the bundles thus formed come in contact, and thus we have out of this compressed tissue of parallel fibres the perfectly developed keloid. This parallelism of the fibres constitutes the characteristic difference between it and the simple cicatrix, in which the scar-tissue consists of a network of fibres running in all directions. In false keloid developed from a scar, the boundary line between the two growths may be distinguished by this parallel direction of the bundles of fibres, within which the vessels are surrounded by spindle-shaped cells. A true and a false keloid are, therefore, not to be distinguished by their anatomical features. Dr. Warren attributes the malignancy, that is, the tendency of keloid to return after extirpation, to the extension of this affection of the vessels to a considerable distance beyond the apparent limits of the keloid itself.

The last and latest of these contributions of our native students at the Vienna school to modern dermatology is the article of Dr. Richard H. Derby, of Boston, upon the Anatomy of Prurigo, in vol. lix. of the *Sitzungsberichte*, 1869. This is a disease fortunately of very rare occurrence with us, although, owing to the loose definition so generally applied to it in this country and England, which confounds it with ordinary pruritus of the skin, it is spoken of in books, and hospitals, and dispensary reports as a common affection. Prurigo and pruritus have in reality nothing in common but their initial letters and the itching, which in the former is only a symptom, in the latter the whole disease. In prurigo the itching arises subsequently to, and in consequence of, well-marked and characteristic anatomical changes in the tissues of the skin; in pruritus the itching precedes and gives rise to a great diversity of structural changes. Prurigo has always the same history, affects only certain regions, and is characterized by one definite and constant efflorescence. Pruritus is only another name for itching; it may affect, therefore, almost any region of the surface, and has no characteristic and constant form of eruption, but differs in each case according to the locality affected and its individual history. Its cutaneous phenomena are chiefly those produced by scratching, and are consequently the direct result of external, mechanical irritation. It is, in

fact, generally no disease at all, but only a symptom of several affections of the skin. In prurigo, on the other hand, the efflorescence, which, as just stated, consists of changes taking place in the deeper tissues of the skin, is only slightly modified by the subsequent irritation it produces. Moreover, pruritus is one of the most common affections of the skin, while prurigo is so very uncommon in America that the writer has seen but three or four cases only in more than ten years' observation of skin diseases in dispensary and private practice.

This confusion in nomenclature, or rather this entire disregard for the principles of diagnosis and classification, has led some writers to place prurigo among the so-called neuroses of the skin. This is a fashionable term of late loosely applied to all sorts of cutaneous affections. A neurosis of the skin is a lesion primarily affecting nerve-tissue, and giving rise, in consequence thereof, to impaired or modified nerve action and subsequent structural changes in the surrounding tissues, of which zoster is a type and almost the only example. Unless this definition is strictly adhered to, almost every disorder of the skin or other organs may be called a neurosis; for diseased as well as healthy vital action is regulated by nervous influence and limited by nervous distribution. But to class prurigo among the neuroses, simply because itching is one of its secondary phenomena, is an absurdity, unless we include in the same category eczema, psoriasis, scabies, etc., or, in other words, divide skin diseases into two classes: neuroses, those which itch, and non-neuroses, those which do not itch.

Our previous knowledge of the minute anatomy of prurigo was slight and unsatisfactory. The papillæ had been found enlarged, and new cells had been observed in profusion penetrating some of the cutaneous tissues, but nothing distinctive or peculiar to this affection had been noticed before these observations of Dr. Derby. From them he draws the following conclusions: 1. That in prurigo there is uniformly a disease of the hair. From the outer root-sheath projects a growth, varying in length, consisting of epithelial cells, and closely united with the root-sheath. It insinuates itself between the muscular fibres of the *arrector pili*. 2. The *arrectores pilorum* attain an unusual development. Through the increased traction these exert on the hair result, on the one hand, a more vertical position of the hair, on the other, a hernial protuberance of the inner wall of the hair-follicle and the outer root-sheath. 3. A serous exudation takes place in the vicinity of the diseased hair, infiltrating the tissue of the corium and the papillæ, and making its appearance as a clear or slightly bloody drop on puncturing the papule.

This discovery, moreover, explains the absence of the papules of prurigo in places devoid of hair, such as the hollow of the hand and the sole of the foot; and their infrequent occurrence in places almost destitute of hair, such as the flexures of the extremities. The cells which form this projection from the root-sheath are continuous and identical with those of the latter. The hair-bulb also shows the presence of numerous round and shining cells, and the hair itself becomes thinner and is more easily pulled out.

Many other articles might be cited which would properly find a place in an exhaustive review of the researches in this new province of dermatology; but enough has been said to show the direction in which the best trained minds are at present seeking for light upon the intimate nature of skin diseases, and the sources to which we must turn for information concerning their labours. We have preferred to confine ourselves to a notice

of this class of contributions, even to the neglect of much of more practical value connected with the clinical aspect of the subject; inasmuch as the latter is sure to find its way into general periodical literature sooner or later, and, as we have said, very little has been left undone in general dermatology by Hebra for German specialists to complete. Those who would know more of this progress than the limits of this article permit us to furnish, or what advance has been made in the whole field of dermatology during the last two years, will find in the *Archiv für Dermatologie* what they seek.

And what have we here at home done for dermatology during the same period? It has hardly yet found a place amongst us as an acknowledged specialty. Only in a few of our largest schools, and within the last few years, is it taught by those particularly devoted to its study, and still more recent is the establishment of departments for the treatment of skin diseases, in connection with any of our great dispensaries and hospitals. Can we wonder, then, that America has as yet contributed little to dermatology, if our views concerning the qualifications for authorship in this branch of medicine, expressed in the beginning, are correct? We have no recent work, then, to take its place amongst others at the head of our article as a representation of an American school. We have no book on general cutaneous medicine which is the work of a large observer; no monographs containing the researches of skilled and specially trained workers. We trust, however, before long to be able to welcome the beginning of a national literature of the right kind. Many young men have come into our large cities during the last few years, trained by study and observation under the best instructors in this department in other countries, and eager for work, who, if faithful to the methods of study acquired there, and to the spirit of their teachers, will, as opportunity and experience are afforded them, bring forth independent and reliable results worthy of their masters and honourable to our country. But observation and work must precede; and we cannot look for a national literature or school of dermatology until our dermatologists are made.

These conclusions are borne out also by evidence to which we have referred in forming our judgment in respect to the other countries of which we have particularly spoken. The *American Journal of Syphilography and Dermatology* is published quarterly in New York, under the editorship of Dr. M. H. Henry, Surgeon to the Venereal and Skin Department of the New York Dispensary, and has just entered upon its second year. Although it can hardly be looked upon as representing any wider field than New York alone, yet its character fairly enough indicates the state of dermatology amongst us as a whole. But two or three original communications have appeared in it, and it has contained only a few reviews and translations from foreign journals, upon diseases of the skin. In the last number there was but a single article in any way relating to cutaneous affections. It is therefore mostly a journal of syphilography, as the order of its titles suggests. It is none the less valuable, however, on this account, and fully deserves the success with which it has been conducted. We trust that it may hereafter, as the observations of reliable and scientific specialists amongst us accumulate, become the national representative of as creditable a school of dermatology as any country can boast.

J. C. W.

ART. XXIII.—*Puerperal Diseases.*

1. *Traité Clinique et Pratique des Maladies Puerpérales suites des Couches.* Par le Docteur HERVIEUX, Médecin de la Maternité. Première et Deuxième Parties, pp. 1138. Paris, 1870.
   A Clinical and Practical Treatise on Puerperal Diseases. By Dr. HERVIEUX, Physician of the Maternité. Parts I. and II.
2. *Die Pathologie und Therapie des Wochenbetts. Ein Handbuch für Studirende und Aerzte.* Von Dr. WINCKEL, Prof. und Director der gynäkologischen Klinik an der Universität Rostock. Zweite, vielfach veränderte Auflage. Berlin, 1869, pp. 496.
   The Pathology and Therapeutics of Childbed. A Manual for Students and Physicians. By Dr. F. WINCKEL, Prof. and Director of the Gynæcological Clinic of the University of Rostock. Second Edition.

WE introduce to the notice of our readers the second part of Dr. Hervieux's work, which, dated August 6th, 1870, must have been among the last books to leave the city, whose sad fall and humiliation from her former high estate challenge the sympathy of the world.

We also take up for examination the treatise of Dr. Winckel. This work was written, as the author tells us in his preface, to supply a want arising from the very brief consideration given to puerperal diseases by writers on obstetrics, in which respect it seems the profession in his country is not different from ours, and to fill a blank left between the treatises upon the subject already in the field and the present standpoint of science. The work has reached a second edition, and bears evidence throughout of careful study and practical experience. As its title implies, it is a manual rather than a treatise: that full and even exhaustive consideration of subjects which characterizes Dr. Hervieux's work is not therefore to be expected. At the same time it is more comprehensive than the French work, and certainly better adapted for the uses of the student and of the general practitioner. It contains, for instance, such subjects as injuries of the external genitals, vesico and recto-vaginal fistulæ, versions and flexions of the uterus, diseases of the lacteal organs, and abnormities of the lacteal secretion, subjects which are not mentioned in Dr. Hervieux's work. There is one omission in the latter work which is as inexplicable as it is singular, we allude to puerperal convulsions, which the French author does not treat of, although he has a section upon nervous diseases of the puerperal state, with chapters upon paraplegia, hemiplegia, and tetanus! Why this is any less one of the *suites des couches* than hemorrhage, which likewise occurs before, during, or after parturition, we fail to discover.

The introduction to Dr. Winckel's work, of about forty pages in length, is especially interesting as giving, as accurately as our present knowledge will permit, a description of the normal course of events in the parturient woman, and an accurate, though brief, description of the changes which take place in the various organs. We shall refer to this again, especially in regard to the course of the temperature in childbed, a subject upon which all reliable contributions are especially welcome, because rare and valuable. We may call especial attention too, in this connection, to a feature of the book which we believe to be unique; the appendix contains a table, extending over forty pages, which sets forth minutely the condition

of the genitals of one hundred women at the time of their leaving the hospital.

Since we barely touched in our last[1] issue the relative mortality of lying-in women in hospitals and private practice, we will give the results of Dr. Winckel's table, in the introduction to his work, which are made up from various sources and embrace a large number of accouchements; he uses the returns of no hospital, the reports of which do not cover a period of at least ten years, and gives the results of 701,122 births in lying-in institutions, and 361,855 in private dwellings. The results are :—

In private dwellings .6—.7 per cent.=6 to 7 deaths in 1000 cases.
" hospitals 3.4 " " =34 " " " "

We will present briefly the views of Dr. Winckel upon the nature, causes, and mode of propagation of the chief puerperal diseases, and although this will bring us in a measure over some of the same ground passed over in the last number, we believe the importance of the subject will fully justify this partial repetition. Dr. Winckel, like Dr. Hervieux, explicitly denies the existence of any single form of disease to which the term puerperal fever can justly be applied, and as strenuously maintains the diverse character of those which pass under this name. He recognizes a general affection superadded to the local, while in regard to the spread and propagation of certain forms of puerperal inflammations, he is a strong contagionist, and is disposed to look upon direct contact, as exclusively as does Dr. Hervieux upon atmospheric influence, as the sole means of transmission.

The subject of puerperal inflammation is opened with a consideration of simple inflammation and ulceration of the vagina and external genitals, the ulcers the consequence of the inflammation, or, far more frequently the traumatic result of delivery, and prone to take on the diphtheritic character. Then follows catarrhal inflammation of the vagina and uterus, an accident which may follow any labour, anywhere, and at any time, the most frequent of this class of diseases, and held by Martin, Buhl, and others to be the sole origin of all the more serious puerperal affections. To this follows a chapter on inflammation of the serous tissues of the uterus and general peritonitis. Under the head of "Puerperal Phlegmon" we have, 1st, metritis, parametritis, and pelvic exudations; and 2d, *diphtheritic* inflammation of vagina and uterus with lymphatic thrombosis and diffuse abdominal phlegmon, the form of disease most frequently epidemic, most rebellious to treatment, and against which the most diverse therapeutic measures have been vainly directed. Chapter V. is upon venous thrombosis, metrophlebitis with metastatic pyæmia, and finishes the detail of the individual diseases, and brings us to the subject which more immediately concerns us here. This chapter is upon the nomenclature and kinds of infectious puerperal diseases, and is very brief. It justifies the change of term from "ichorrhæmia" in the former edition, to "septicæmia," a change which is made from the better knowledge we now have of the latter derived from the investigations and experiments of Panum, Billroth, C. O. Weber, Hemmer, Schweninger, and Bergman, and from the fact that "the putrid poison had been discovered and demonstrated." This substance by Bergmann termed "sepsin" does not attach alone to molecular constituents, but is found also in fluids; its deleterious influence is rapid, extremely intense even in minute quantity, and its introduction to the system shown by

[1] January No. of this Journal, p. 174.

high temperature. Local suppurations follow its injection, there are ecchymoses of the heart and pleura, while the lungs remain free, and the chief force of the poison seems to be expended upon the intestinal canal, injection of the mucous membrane, swelling of Peyer's glands, and serous infiltration of the walls of the tube, and finally emboli are frequently found in the spleen. A further necessity for this change is found in our increased knowledge "concerning the changes which take place in vascular thrombi, and the importance of the pus in the dissolution of the thrombus." The term "septicæmia" is therefore alone justifiable; and is alone in harmony with our knowledge of the facts; it designates the poisoning of the blood with putrid matter, while "ichorrhæmia" is not suitable as a name for the effects produced by the pyrogenous substance of pus, "because not merely abnormal and putrescent, but all pus, even that which is fresh—pus *bonum et laudibile*—contains this substance and produces the effects described."

He sets forth briefly, then, the following as severe forms of fever which may follow upon the diseases already mentioned:—

"1. *Simple septicæmia:* Poisoning of the blood by putrid poison, developed in a local suppuration taking place within the genitals, as, for instance, thrombus of vulva or vagina, suppuration of fragments of placenta or membranes, etc.

"2. *Simple pyæmia:* blood poisoning without metastatic deposit.

"3. *Metastatic pyæmia:* suppuration of thrombi in the genitals or their vicinity, with metastatic abscesses in the lungs, spleen, liver, kidneys, etc.

"4. *Metastatic septico-pyæmia:* ichoro-purulent dissolution of thrombi, with metastasis of ichorous nature in the lungs, etc.

"5. *Genital diphtheritis*, which is to be separated from the former, because the infectious matter appears to be neither a pyæmic nor a purulent, and also because the type of the disease is different from septicæmia and pyæmia."

Dr. Winckel opens his next chapter upon the "Etiology of the so-called Puerperal Fever" with an historical sketch of the various doctrines which have reigned supreme from time to time in the medical world, similar to that given by Dr. Hervieux, but very much briefer. We only extract from it one paragraph upon the "theory of the erysipelatous nature of the disease," because the latter author, full and complete as he is upon this part of the subject, did not mention it.

"This theory, an outgrowth of the "phlogistic," was first brought forward by Pouteau, 1776, and adopted by de la Roche, Home, and Bayshoffer. De la Roche believed this fever to depend upon an erysipelatous inflammation of the intestines, Gordon of the peritoneum, and Ozanam of the entire uterine system and its neighbouring organs. West holds the same views, and both he and Gordon because, during epidemics of puerperal fever, and at the same places, erysipelas appeared in non-lying-in subjects, and because the nurses of the affected puerperal patients suffered not seldom from erysipelas of the hands and arms. The term erysipelas, as used by the English, is far more comprehensive, however, and includes, as Hirsch[1] has amply shown, far more than our simple erysipelas, as they apply this name to all phlegmonous affections of the skin (?). Ingleby, Storrs, and others have likewise frequently observed cases of erysipelas in proximity to severe puerperal cases. Ackerley and Lee refer to the frequent simultaneous occurrence of erysipelas neonatorum with puerperal epidemics in lying-in hospitals. The English, therefore, in the latest times hold fast to the identity of puerperal fever and erysipelas, particularly Moore, Rams-

[1] Hirsch is very frequently quoted by the author, especially in regard to the epidemic occurrence of the disease. The reference is to his "Handbuch der historisch-geographischen Pathologie." II. Band, p. 382 bis 432, 1864.

botham, Nunneley, Fox, and others. Also many Americans attach themselves to this doctrine, as Hodge, Wilson, Kneeland, Leasure, Dutcher, Wallace, and the latter maintains to have established the reciprocal contagiousness of both diseases."

He then sketches the progress of the profession from fanciful theories under which the origin of the disease could be attributed to cold, errors of diet, etc. As the doctrine of the diversity of diseases which passed under the name of puerperal fever gained ground, as the greater prevalence of the disease in lying-in hospitals was observed and duly estimated, conviction of the contagiousness of these grave puerperal accidents was forced. The doctrine of "miasmatic" origin then took its sway, and had such supporters as Cruveilhier, Scanzoni, and Kiwisch. Under the influence of a poisoned atmosphere a primary specific alteration of the blood took place, and this hæmatic condition caused the local affections, or even sometimes killed by direct action on the nervous centres. This is the theory which Dr. Hervieux so strictly maintains, as we have seen. In opposition to this came Semmelweis in 1847, with the doctrine of putrid infection, either from without, for which organic matter from any cadaver, if putrid, was alone sufficient, or from within by absorption of putrescent matter from the genitals.

After reviewing these various doctrines, he states his own as follows :—

"The term puerperal fever is to be applied to those phlegmonous and diphtheritic affections of the genitals out of which is developed one of those forms of febrile disease detailed in the preceding chapter."

It is to be especially borne in mind that there is nothing specific in any of these morbid processes, that they are by no means confined to the pregnant puerperal. This doctrine is taught by Trousseau :—

"Finally, the phlegmonous as well as the phlebitic affections frequently occur in men, and are throughout analogous to these puerperal diseases. Above all, between the light as well as the severe puerperal diseases, and those affections which so often follow wounds (septicæmia and pyæmia), there can be no essential difference shown."

"It is further almost undoubtedly established by the latest investigations that *the point of origin of these affections almost always lies in the genitals*, and from this arises the general disease."

"The local affection passes to a general, either by travelling and spreading in the course of the fibrous tissues, or by the lymph and blood transporting poisonous fluid into all the organs of the body, or foreign particles are carried by the circulation and deposited in various organs where they establish diseased centres; and, of course, various combinations of these modes of extension may occur."

It will be seen from these extracts that the author occupies very different ground from Dr. Hervieux.

But now as to the origin of epidemics, by far the most important question. The single cases may occur anywhere at any time, simply because their causes are frequent and unconfined to any particular location. These causes are: 1. Wounds and bruises of the genitals; 2. Putrefaction of portions of the placenta or membranes; 3. Primary blennorrhagic inflammations of the genitals may pass on to parenchymatous and serous inflammations; 4. Lesions of the genitals may be inoculated with cadaveric poison, or with the discharges from unhealthy wounds; or the poisoning may take place without any lesion. These are causes found everywhere, which may be present at any time; in any place; in private practice as well as in

hospitals; among the rich and poor, and in persons of most different constitutions and most varied modes of life.

To establish more firmly the origin of the disease spontaneously, independent of all infection and all miasmatic influence, he details the circumstances of a case of "the severest form of septic puerperal disease" which occurred under his own observation, and in a country district.

He then goes on to lay down what he calls the facts as to the occurrence and spread of epidemics, and we will give them with the utmost possible brevity:—

1. They occur with far the greatest frequency in lying-in hospitals. (Of 216 epidemics, 129, with 41 more in the neighbourhood at the same time: Hirsch.)

2. Locality, soil, situation, etc., have no influence.

3. The epidemics begin and prevail most frequently in winter.

4. It has been frequently observed that in large cities where there are several lying-in hospitals, there will be a good state of health in one, while in others a severe epidemic prevails; and this not merely when these institutions are widely separated, but when they are under the same roof. Examples: Vienna, given by Arneth and Semmelweis; London, Dublin, Paris, and St. Petersburg, by Hugenberger and Hirsch; Berlin, under the author's own observation.

5. In many cases, while a murderous epidemic prevailed in lying-in hospitals, the population of the city enjoyed unusual health.

6. It has been shown by many observers that a long stay in a lying-in hospital before confinement, in no way predisposes to severe diseases.

7. All accidents and complications of labour, as well as all interferences with it, increase the mortality, while the constitution of the patients exercises no influence.

8. It is further a fact that in large lying-in hospitals, patients who came in after delivery showed the best health, although they were placed immediately between sick puerperal patients. (Hugenberger. Späth.)

9. It is also a fact that the overcrowding of lying-in hospitals is by no means always injurious to the health of the inmates, but that only by overfilling of small hospitals the rate of mortality generally increases.

10. "It is likewise a fact that the epidemic spread of puerperal fever outside of hospitals, in by far the greater number of cases, took place in the practice of a single physician or midwife. The proofs are gathered from Gooch, Simpson, Peddie, Hutchinson, Ingleby, Litzmann, Levergood, Clarke, Robertson, Campbell, Warrington, West, Holmes, Chiari, Storrs, Paley, Lee, Schulten, Hugenberger, Arneth, Punch, Armstrong, Wegsheider, Cederschjoeld, Blackmore, Elkington, Beatty, Schneider, Speyer, A. Martin, Semmelweis, Veit, Stotberger, Empis, Kaufman, and I have also given like testimony."

11. Primiparæ suffer far more frequently than multiparæ.

Of all these facts, the author claims, not one is in favour of a miasmatic origin of the disease, nor can they be clearly explained under the assumption of such an origin, while, on the contrary, under the theory of infection, they admit of easy explanation.

12. "*The inoculation of pregnant and puerperal women with putrid matter will generate sporadic as well as epidemic childbed fever.*" Of women delivered of macerated ova, twenty-nine per cent. are affected by auto-inoculation. "All the authors cited from Hirsch under 10, who furnish instances of epidemics prevailing in private dwellings limited to the

practice of single physicians and midwives, likewise adduce proof that the disease was carried by the practitioner from one patient to the other. Very many of the observations of these men have, according to Hirsch, almost the importance of an experimental proof." The author also refers to a striking instance, given in another part of the work, which came under his own observation in Rostock.

The author then states his position as follows :—

"Epidemics of puerperal fever in lying-in hospitals very frequently depend upon direct transportation of infecting (purulent, putrid, or diphtheritic) matter from one patient to another; that such epidemics originate sometimes from a spontaneous case, but can also frequently be traced to an infection with such putrescent or poisonous matter."

He is not content, however, with excluding, in this statement, the atmospheric propagation of the disease, but goes on to argue that this can be the case, but extremely seldom. When it does occur, he holds it to be rather by direct inoculation of genital lesions by the poisoned air than by respiration! Some of his arguments are laboured, if not far-fetched, as, for instance, the explanation that women who stay some time in the hospital, soon learn that to avoid the frequent examinations of students, they must keep out of the labour-room as long as possible; and, therefore, conceal their labour as long as possible! Also, that in winter, when the ventilation is not as good, and there is more crowding, the water is cold, and the students and midwives avoid washing their hands! Some of them have weight, as he makes the statement that the improved rate of mortality in Vienna[1] was decidedly not to be attributed to attention to ventilation alone, because the change was only made first in 1864; and by Späth's report it is certainly established that already in 1863 the rate of mortality in both the Vienna lying-in clinics was only 1.06 per cent. Also in Hanover, where there are the most excellent arrangements for ventilation, an epidemic occurred in spite of them.

Of course his main argument is fact 6, that long stay in a hospital previous to labour, does not predispose to disease. The question, of course, arises, Is it a fact? The observers whose names the author attaches to this paragraph are Braun, Hecker, and Veit. In the last number we just touched upon this point, but since in this view of the case the question is one of importance, we will turn to Dr. Hervieux's work, and give the particulars. He admits that there are conflicting statistics upon the subject, and that the question is complex and of difficult solution. He thinks, however, that error has arisen from taking the returns of hospitals for short periods of time, and that taking these decennially will give more reliable data, and he thus makes the mortality of the longer residents "notably higher" than those of the new-comers :—

"Of 21,029 women admitted to the Maternity, from 1855 to 1864 inclusively, there were 8123 confined on the day of their admission, and 12,906 who sojourned in the hospital from two days to a month or more before delivery. Of the 8173 there were 7559 discharged and 564 died. Of the 12,906 there were 11,698 discharged and 1208 deaths, which gives a mortality of 6.82 per cent. of those confined on the day of admission, and of 9.35 per cent. for those of longer stay in the hospital."—*Hervieux*, p. 49.

Dr. Winckel's countryman, Scanzoni, bears strong testimony upon this point. The increased aptitude to disease on the part of those who have

[1] Given by Dr. Hervieux; see our last number, p. 176.

dwelt long in the hospital previous to confinement, has been matter of "frequent observation" with him. And not only these women come down with fever, but the children they bear are attacked, during the first days of their existence, with fatal erysipelas, cellular sclerosis, inflammation of the navel vessels, lungs, and peritoneum, "the pyæmic or septicæmic character of which will not be doubted by any competent judge.[1]

Hecker explicitly states that the same thing has fallen under his observation at the Munich Lying-in Hospital, and believes that the first week's residence is the most dangerous, while a longer stay seems to acclimate the patients. Some statistics by Dr. Hervieux, seem to show that the danger does not increase in a ratio with length of stay.

But has Dr. Winckel included *all* the facts in his communication? He does not mention, does not even allude to the fact that these puerperal diseases sometimes begin before labour, before there has been any opportunity for contagion. That this is a fact, and one of no unfrequent occurrence, we have only to turn to Dr. Hervieux's work to learn:—

"It is not by units, but by dozens that we can count every year, in the Maternity, pregnant women who are attacked with violent rigors and abdominal pains before rupture of the membranes, before even the first uterine contractions. No sooner are these women immersed in the epidemic atmosphere, than they absorb the toxic principle, by the channel of the respiratory organs, or in some other way, and the effects of intoxication do not await the act of parturition before manifesting themselves." (p. 75.)

And how is it with the fact of the transmission of the disease to non-pregnant subjects? Dr. Winckel does not mention or allude to this, yet Paul Dubois, Danyau, Vollemeier, Depaul, and Tarnier have given instances of it, and Dr. Hervieux says the observations of this kind are "so numerous that doubt can no longer exist in the minds of those who are impartial, and who seek for truth in good faith;" that although cherishing, for a long time, doubts as to this kind of transmission, "in the presence of facts multiplied under my eyes, I have been obliged to give way to the evidence, and recognize in the puerperal poison the power of affecting, in certain circumstances, subjects placed outside of the puerperal condition."

The ground we have gone over has brought prominently forward the fault of both these authors—judgment of the subject too exclusively from their own standpoint. The one has studied the disease in the large hospital of a city, the other in a small institution of a small town; the one finds in vitiation of the air by far the most potent cause of the disease, and finds prophylactic measures chiefly in measures addressed to this influence; the other has seen, most frequently and strikingly, instances of direct inoculation by the hand of the accoucheur or the instruments and vessels of the lying-in room, and thinks all prophylaxis not bearing upon this point, useless. Nothing illustrates better, we think, the justice of the remark of Trousseau, that the cause of so wide differences of opinion upon this subject was to be found *in the different circumstances under which the disease was observed.*[2]

Admitting, then, both to be right—as we think any one must who impartially examines the "facts" we have extracted from their works—admitting that direct contagion and hospital miasm are alike efficient in the spread of the disease, are the etiologic influences of epidemics then exhausted? What shall we do, for instance, with cases where epidemics

[1] Lehrbuch der Geburtshülfe, Band iii. p. 376, 1867.
[2] Clinique Médicale, t. iii. p. 613.

have prevailed over country districts, and where neither contagion nor a confined and impure atmosphere could be charged with the pestilence? To take an instance near home, we would refer to the observation of Dr. Byford[1] when the disease raged in a frontier district, under circumstances in which neither contagion nor miasm could be invoked to explain its spread. Nor does this instance stand alone, so that we are obliged, upon the testimony of competent witnesses, to admit the existence of an "epidemic influence"—a something unseen, but often most surely felt, which, like the echo, is recognized but in one way; which always manifests its presence, yet mocks us in our attempts at discovery.

We cannot close this branch of the subject without impressing one practical lesson to be derived from Dr. Winckel's doctrines. It is, that any single case of puerperal disease, anywhere and at any time, may become the starting-point of an epidemic, and that the practitioner, by incautious passage from post-mortem examinations to the lying-in chamber, may be a messenger of death instead of life. Did this author alone teach this, were there but a shadow of proof to sustain it, it would seem that every conscientious man would feel bound to take such precaution as to prevent himself from being the instrument of such disaster. Certainly, we can see nothing but a begging of the question in the statement that sporadic cases, "by the fact alone that they are isolated," will not spread, nor could we think any one justified in neglecting "numerous and vigorous precautions" to prevent transmission of the disease even when attending a single and isolated case.

But scanty space remains now in which to redeem our promise to take up some of the individual diseases and present Dr. Hervieux's views in regard to them. Nevertheless, we believe that even the attempt will bring us to some points of interest and practical value. We will try and follow him through the subject of general peritonitis. That general peritonitis is the most common of all the acute puerperal affections of the peritoneum, is, we are told, a very general error, and he points out the modes in which the mistake is made, of confounding partial and regional inflammations with those of the whole membrane. He quotes Behier to the same effect; of fifty-two cases, in only five did the inflammation extend over the whole extent of the peritoneum. He makes two classes of general peritonitis: the one the most usual form, familiar to us all, beginning at some point and extending, step by step, until it becomes general; the other general from the beginning (*d'emblée*), which occurs only exceptionally and especially during the height of epidemics, and in which all the characters of the other are represented in a most aggravated degree. It is this form which is sometimes termed *siderant*, and we present his graphic picture of it:—

"Less than twenty-four hours after the appearance of the initial chill, the patients are a prey to the most acute sufferings, which extend over every portion of the abdomen. No part of this vast cavity is spared. The uterine region, the iliac fossæ, the flanks, the umbilical region, the epigastrium, the two hypochondriæ, are by turns or simultaneously the seat of pains affecting every possible form; lancinating, tearing, contusive, boring, impressing on the countenance the seal of anxiety, ruining the strength, and provoking from the patient the most lamentable complaints. Tension and development of the belly, dryness of the mouth, tormenting and continual thirst, redness of the tongue, nausea, vomiting, diarrhœa, alteration of the features, excavation of the eyes,

[1] Medical and Surgical Diseases of Women, p. 555.

of the nostrils, agitation, insomnia, all this array of symptoms which belongs to confirmed peritonitis manifests itself with, or immediately after the first pains."

From the pathological anatomy given of the disease we make the following extract, because it bears upon Dr. Winckel's views as to the almost constant origin of acute puerperal diseases in some local lesion of the genitals. After admitting that in the majority of cases the autopsy shows either metritis, metro-phlebitis, or uterine abscess, he says:—

"There are cases, and I have published such in the *Gazette des Hôpitaux* (1866), in which the most advanced lesions of the peritoneum are entirely independent of all alteration, however slight, of the uterine organs."

The invasion of the disease is generally without warning, appearing in 87 cases 68 times before the third day, and is marked almost universally by a *chill*, which may vary from a slight feeling of cold lasting but a few seconds to a severe rigor of some hours' duration.

To the chill follows *pain*, which is scarcely ever absent, and not only makes the diagnosis easy, but affords the means of distinguishing the peritonitis general *d'emblée*, from that which becomes generalized by degrees. In the latter each successive step of extension of the disease "is marked by redoubling of the fever, of the anxiety, the agitation, the cries, the moans, and the prostration."

Frequency of pulse follows, and the author lays stress upon what he calls the "capital fact," that this frequency "gives constantly the measure of the intensity of the disease."

With increased circulation comes heightened temperature, and this part of the subject being yet novel, and all contributions to it being valuable, we will turn to the excellent introduction of Dr. Winckel's work, and give from it the course of the temperature in childbed when undisturbed by disease:—

"By numerous examinations, made by Grünewaldt, Dohrn, Wolf, Schroeder, Baumfelder, and myself, it is established that within the first twelve hours after delivery a slight ascent of the temperature takes place, the height of which very little, if at all, exceeds the limits of the normal variability. In the second twelve hours there follows ordinarily a slight descent. While this ascent then is especially plain when it coincides with the general ascent from night to the morning, or from noon to evening, it may be easily overlooked in case, after termination of the delivery in the evening, the first observation is made on the following morning.

"After the occurrence of the fall of the temperature at the end of the first twenty-four hours it begins gradually to ascend again. The evening temperature is generally higher than the morning; the daily excursions are, however, slight. This ascent keeps pace, as a rule, with the development of the lacteal secretion, and falls again as soon as this is established, or, in those not nursing, begins to dry up. In cases entirely normal, however, the differences between the maxima and minima are scarcely more than the ordinary variability, *i. e., the temperature of healthy lying-in women does not vary more than that of healthy persons generally.* The average temperature, nevertheless, is something higher than in other persons, since it runs normally in the space between 37.2° and 38.2° C. [98.9—100.7 F.].

"I am convinced that these limits of the temperature are thoroughly reliable, and it cannot be admitted that an ascent even to 40° C. [104 F.], as held by Hecker, Grünewaldt, and lately by Lehmann, belongs to the normal puerperal condition. The very rule which Wolf lays down, that ordinarily *the temperature ascent caused by the secretion of milk does not exceed* 0.5° C. [.9 F.], shows, in the most beautiful manner, how admirably the functions of the individual organs harmonize, while, in spite of the enormous revolution which

takes place in this time, not a trace of deviation can be shown from the ordinary course in other individuals." (pp. 6–8.)

In puerperal peritonitis there is, of course, marked elevation of temperature. Even during the height of the chill, Dr. Hervieux saw it in one of his patients at 104.7 F. Far more space, however, is occupied in showing the relations of pulse to temperature than to tracing the general range of the disease under consideration. Thus he gives a table showing the variations which the thermometer may reach at any given rate of the pulse, and another showing the variations of the pulse for different degrees of temperature, and several others. We do not find that addition to our knowledge here which we hoped for, and which we think it was but right to expect.

Symptoms on the part of the digestive organs of course play a prominent part in the disease; we notice one or two points. Anorexia is by no means present, and bad cases beg for food:—

"I am accustomed to say to my students: Mistrust an accouchee who, in the midst of the febrile condition, and with pronounced peritoneal affection, says to you suddenly: *I am no longer in pain; I am hungry; I want to go away.* That woman has delirium, and if it is not yet manifest, be assured it will break out soon."

Vomiting is not a constant symptom. Very common in grave epidemics, it is much less frequent in milder ones, and may lack entirely. After detailing particulars as to this symptom when present, he says:—

"Meanwhile these vomitings sometimes cease all at once, without the condition of the patient improving. This result, which is generally due to the medication, is explained by the re-establishment of the diarrhœa, which comes then to take the place of the vomiting. These two phenomena are so united the one to the other, in lying-in women, that if you attempt in them to arrest the diarrhœa, you will bring back the vomiting."

Diarrhœa, as a rule, exists, and, once declared, persists, and "is intense in proportion as the peritonitis is unaffected by our means of treatment."

"When one succeeds in arresting the diarrhœa in grave cases, it happens too often, and the occurrence is common in my service at the Maternity, that vomiting reappears. If we master the vomiting by appropriate remedies, the diarrhœa reappears."

Tympanites follows soon upon the other symptoms. The author does not assent to the views of Niemeyer, as to this gaseous distension depending upon a "collateral œdema" with resulting paralysis. He refers it to an "inertia," the same as one sees in the extremities, and resulting from the general depression of the system. This symptom is sometimes developed to such an extent as to become a serious complication of the original malady, and even, by interfering with respiration, the direct cause of death.

"The diaphragm, as well as the organs which rest upon its superior face, the heart and the lungs, are thrust upwards to such an extent that the thoracic cavity may be diminished one-half. The liver and the spleen follow the diaphragm in its ascent. I have seen the liver, in some cases, entirely turned over by the pressure of the dilated intestines; its inferior surface was anterior, while its convexity looked directly backwards. The spleen is carried upwards and backwards, and sometimes flattened against the left side of the spinal column."

As to the lochia and lacteal secretion, he reiterates here the statement made in the historical sketch. They are neither of them certainly suppressed by the inflammatory diseases, however grave. The fact will bear repetition, because a different view is generally taught.

"We see daily the lochia abundant, purulent or sero-purulent, and more or less fetid, coincident with the gravest symptoms of puerperal peritonitis."

"I have been often much surprised to see the lacteal secretion established and the flow continue in the midst of the gravest manifestations of peritonitis."

We leave many points untouched, and pass on to the diagnosis. Between peritonitis general *d'emblée* and by extension, the diagnosis is principally made from the fact that successive attacks of pain following at distinct intervals, and, although less reliably, upon the rigor being single in the former, while in the latter it is frequently multiple. Metritis cannot easily be mistaken for peritonitis; uterine phlebitis, however, presents more difficulty:—

"In uterine phlebitis the belly is soft and not tender; it is hard, distended, painful, in peritonitis. Even when tympanites exists coincidently with uterine phlebitis, which is entirely exceptional, error may be escaped by remembering that the tympanitic development was preceded by the acute pains in the peritoneum, while it appears in the phlebitis independently of all pain. An attempt has been made to distinguish the two diseases by the rigors, single in the one, multiple in the other, multiplicity belonging to uterine phlebitis. But unfortunately the fact will not sustain this; peritonitis extending by successive steps is often accompanied by several chills, and certain inflammations of the veins are developed with but a single one. The pain is then the diagnostic sign *par excellence*."

To distinguish puerperal pleurisy from peritonitis is not so easy as would seem. Dr. Winckel expressly mentions this difficulty from the impossibility of varying the patient's position. Meantime it may be well to state that the relative frequency of occurrence of puerperal pleurisy is far greater than is generally believed, or set forth in text-books. Varying in different epidemics, so that Leake was led to inquire if it was not more frequent than peritonitis, it yet occurs so often that Dr. Hervieux called it one of the most frequent forms of puerperal disease after peritonitis and phlebitis. He points out the sources of error and the difficulty of making a daily physical examination, and says:—

"There is a very simple and practical mode of learning whether it is necessary to proceed to an examination of the chest; it is to count daily the number of respirations. When the figure goes above 40, there is cause for suspicion. Beyond 50, there is already ground to suspect a grave affection of the pleura and of the lungs; but, above all, of the pleura."

It would scarcely seem necessary for the author to call attention to the fact that a distended bladder may be mistaken for peritonitis, yet we were once obliged to take a long ride, in winter, over bad roads, to see a case of "puerperal fever," which we promptly relieved with the catheter.

The subject of diagnosis presents to us another interesting question—the differential diagnosis of milk fever from grave puerperal inflammations. We think it will surprise, if not puzzle, some who think they have seen the disease, and have talked about it almost daily during a lifetime, to hear the question propounded, whether there be such a thing as milk fever! and not only to hear it asked, but boldly answered in the negative by both these authors. They rely mainly upon the thermometer as an accurate indicator of the febrile condition to sustain them, and we have seen by the extract from Dr. Winckel's introduction how slight is the variation of temperature during the normal lying-in state. Still, we must admit that testimony does not agree upon this point. Mr. Squire,

for instance, states that "the temperature is constantly and regularly disturbed at the time of the secretion of milk."[1] Here is what Dr. Hervieux says; he is writing of the rigor:—

"As to the chill called the chill of milk fever, I contest its existence in the normal condition of lying-in women whose hygienic conditions leave nothing to desire. * * * I limit myself here to this statement: if a certain number of women present, on the second or third day of their lying-in, a rigor which you are tempted to attribute to milk fever, the chill should be held in suspicion; and if you will search closely for its cause in the abdomen, in the genital organs, in the state of the lochia, you will have a good chance of finding it."

Dr. Winckel goes into the question at far greater length, and his remarks are too interesting to omit:—

"Carus, as long ago as 1820, showed that the modes of origin and causes of the so-called milk fever may be very different, slight cold, mental emotions, errors of diet, irritation of the nipples and breasts, as well as of the internal genital organs; that therefore the milk fever is a very polymorphous thing, and that it is absolutely necessary to look closely for the cause of these light febrile attacks. In spite of this, the essentiality of milk fever is maintained by many even at this time; not only this, but puerperal febrile attacks of longer duration are termed 'protracted milk fever.' An investigation of this must necessarily be renewed, since the establishment of the normal course of the temperature of the puerperal condition depends upon it. And since, after Hecker (1855), this was first begun by me (June, 1861), by the year 1863, after numerous thermometric observations of 200 lying-in women, many of whom remained entirely free of fever, I arrived at the conclusion that it was finally time *to banish entirely the name milk fever from scientific language;* since, as an indefinite term for a series of various affections, it decidedly hindered a recognition of the true cause of the fever, a diagnosis of the real disease.

"I stand to-day, therefore, upon the same ground, and, strengthened by my long experience and numerous observations, maintain that the simple symphoresis, the physiological hyperæmia of the breasts, is in and for itself unconnected with any febrile grade of temperature; under it the thermometer marks at the highest the sub-febrile condition, 38.2° C. [100.7° F.]. It is only where there are sore nipples, or beginning of inflammation of the breasts, or when there are ulcerations or other affections of the genitals, that actual fever occurs. Without chill, or chills, there occurs then a rapid and considerable ascent of the temperature, even above 40° C. [104° F.], *which has no connection with the secretion of milk, but depends upon a local inflammation of the breasts or the genitals.* That such a fever occurs so frequently in childbed finds its explanation in the extremely frequent occurrence of rhagades and fissures of the mucous membranes, which are found, as we have before shown, in almost every other patient. So long as these local inflammations are not with certainty excluded, and also other influences which may cause a high temperature, as emotions, error of diet, &c., so long it cannot be held that the beginning of the lacteal secretion is the cause of the fever."

Dr. Winckel then goes on to state that two authors have written against his views, and declared in favour of retention of the term "milk fever." These are Schroeder and Schramm. Yet the former carefully observed one hundred and thirty-five cases, and found this fever, pure and simple, to occur but seven times, and the latter found it only three times in a hundred cases, an occurrence of only 4.2 per cent. by both these observers. He further quotes Eichinger,[2] who wrote an inaugural dissertation upon the subject, in support of his views. In answer to the question

[1] Trans. of Obstetrical Society of London, vol. ix.

[2] Considérations sur la Nature et les Causes de la Fièvre de Lait. Strasburg, 1865.

whether milk fever always and necessarily declares itself, Eichinger answers:—

"The most of modern authors say that it habitually appears, but that it is lacking with tolerable frequency. As for me, I say that *it never appears* when it is not caused purposely, for a fever having its point of departure in the mammary congestion never occurs if care and proper precautions are taken."

We pass on to the treatment of puerperal peritonitis; and first, of general depletion. If the extracts we make from both authors are somewhat long, we think no apology necessary; certainly not to any reader tempted to follow the practice of Gordon in this disease, nor to any interested watcher (and who is *not* interested?) of the progress back to professional favour, of a remedy almost entirely banished from use, and, as its friends claim, unjustly banished, because formerly abused.

Dr. Hervieux says:—

"Among the remedies directed against puerperal peritonitis, venesection has enjoyed favour the longest. Hippocrates, Aetius, Paul Ægineta, Avicenna, Felix Plater, Gillaumau, Mauriceau, Delamotte, Puzos, Levret, Delaroche, Armstrong, Robert Thomas, Gordon, Hey, Gasc, and others have prescribed this mode of treatment.

"In our days this remedy has been completely abandoned. Paul Dubois first gave the signal of mistrust, a mistrust as wise as legitimate, then of complete desertion, and he has been followed by all practitioners. This wise accoucheur had noted that after a bleeding of two or three "palettes," the scene changed; extreme feebleness succeeded to an exaltation of the forces; the pulse, before hard and full, became soft and compressible; and finally the whole *cortege* of typhoid symptoms manifested themselves. Voilleneir, Alexis, Moreau, Tarnier, have remarked that, in the epidemics of which they have left us a description, bleeding had always done badly; that it plunged the patients into a complete prostration, and aggravated the general symptoms.

"As for myself, I declare that in the small number of cases in which I have believed myself justified in taking blood, I have never seen any benefit derived from it. It is true that I have only had recourse to it with extreme reserve, and to the most limited extent. * * * * * * * * *

"The condemnation of bloodletting rests upon the following considerations:—

"1. The rapid march of the disease does not permit the organism to recover from the feebleness into which the extraction of blood throws it.

"2. The debility resulting from large losses of blood singularly favours the infection *totius substantiæ* by the putrid matters of the abdomen.

"3. Epidemic peritonitis, that which arises from air-poisoning contracted in lying-in hospitals, should be at least very severely excluded from the cases to which emissions of blood are applicable.

"4. Considerable losses of blood, either artificial or spontaneous, have appeared to me to predispose lying-in women to a rigor. Now, the rigor is very often the precursor of the gravest accidents."

In reading Dr. Winckel's testimony, taken from his chapter on the general therapeutics of puerperal diseases, it is to be remembered that his field of observation has not been a large city, or a crowded lying-in hospital:—

"It is known that by a venesection the watery constituents of the blood, colourless corpuscles, and the fibrin are increased, the red corpuscles and the albumen, on the contrary, are diminished. By emission of blood, there is therefore directly brought about a condition of this fluid analogous to that of pregnant and lying-in women, or the condition already present in them is intensified. It is therefore scarcely doubtful that the evil effects of depletion, as great exhaustion, very slow convalescence, lasting disturbances of nutrition,

must show themselves most strikingly in puerperal women. We must further maintain that by a venesection even to syncope, a reduction of temperature of only .5° to .7° R. can be effected, and after ordinary bleedings there is no descent at all, or even perhaps a slight rise; further, by observation of the temperature in cases of placenta prævia, no descent has been recognized, and we find, besides, that lying-in women are more often frequently ill after considerable hemorrhages than without them. * * * * * * * * Hugenberger relates that he believed he had derived benefit from it, founded upon the fact that of sixty-four cases of metroperitonitis treated (only a single pound of blood was taken, however), only one in four of the patients died, while before every third case was fatal. Since the year 1850, however, *after every case of general depletion there followed, almost without exception, rapid failure of strength and fatal result by dissolution of the blood.* Since that time, therefore, venesection has fallen into actual discredit even in St. Petersburg, and has not again been taken up. If to this we add the experience of other authors—of Braun, who did not find it necessary in twenty thousand lying-in cases; of Retzius, Faye, Elsaesser, Pippingskoeld, and Pfeuferkerchensteiner, who all recognized the uselessness of venesection in childbed, and pointed out its dangers, and my own experience of the cases in which (1859–60) I applied the remedy, and in no instance saw a favourable result, we must come to the conclusion that *venesection in puerperal diseases is not merely unnecessary, but also is frequently injurious.*"[1]

Dr. Hervieux is as warm an advocate of local depletion as he is an opponent of general, and altogether prefers cupping to leeches. He compares the two remedies at length, and dwells upon the advantages to be derived from wet cupping, "which constitutes one of the most important modes of treatment" he is accustomed to oppose to puerperal peritonitis. Dr. Winckel admits that local depletion ameliorates the pain, and does good in other ways:—

"The latest investigations of Cohnheim upon inflammation and suppuration show that the local emissions of blood in the neighbourhood of inflamed parts, by the lessening of the blood-pressure and promotion of the circulation, are a probable useful antiphlogistic."

Ipecac is a favourite remedy with the French author. He says any one who has seen the enormous quantities of bile in the stomach and intestines of these subjects, a point duly considered in the pathological anatomy of the subject, will comprehend the favour shown to emetics by Doulcet and a long list of able authorities. Administered as an emetic at the very beginning, he places a high estimate upon the value of ipecac, but does not think it judicious to repeat the remedy. Dr. Winckel only speaks of ipecac as a remedy which "in the last two decennia has found no defender," to his knowledge.

Both authors condemn cathartics as a "basis treatment" of the disease, and agree that they are only occasionally of service. But they are directly opposed to each other upon the value of another remedy—the application of ice-bladders to the abdomen. Béhier is the modern father of this mode of treatment, he having read, to the Academy of Medicine, a memoir upon the subject in 1862; but the remedy has had such illustrious supporters as Cullen, Hufeland, and Van Swieten. In spite of all efforts, however, Dr. Hervieux denies that it has succeeded in obtaining a foothold in practice, and gives his own experience as follows:—

[1] Dr. Winckel's views upon bloodletting are identical with those of Scanzoni, as set forth in his *Lehrbuch der Geburtshülfe.*

"I instituted the refrigerant medication in the Maternity in 1862, applying it according to the directions of Béhier. The result was so discouraging that I was obliged to abandon entirely this mode of treatment."

Dr. Winckel, however, estimates the remedy highly. In his chapter on general therapeutics he says it should follow local depletion, or, in many subjects, take its place entirely.

"When the ice-bladder is so laid upon the uterus as to surround it like a cap, separated from it only by the thin walls of the abdomen, it not only moderates the pain as surely as the abstraction of blood, removes the hyperæmia, markedly lowers the temperature of the affected organs, lessens the spasmodic contraction, but it has, on the other hand, the advantage of promoting the involution of the uterus by improvement of circulation through it, and promotion of contraction."[1]

In his chapter on serous puerperal inflammation he directs three or four ice-bladders to be applied to the abdomen :—

"These must remain *day and night*, the ice being frequently renewed until the temperature is considerably fallen, and the patient complains of them. * * * In regard to the consequences of the ice treatment, which I have often carried out for more than fourteen days in succession, and, when ice was plenty, ordered immediately for all severe pain in the abdomen, I can indorse the experience of Béhier. There never appeared in my cases an evil result; never a diminution of the lochia or of the milk; never any disease or gangrene of the skin. * * * The statement of Hervieux, that he had repeatedly tried the application of cold to the abdomen, but always with great injury to the patients, is to me entirely incomprehensible."

We may say here that Jonlin[2] also bears strong testimony in favour of Béhier's ice-plan, even as a prophylactic as well as a mode of treatment, *i. e.*, he applied it upon the first appearance of abnormal pain, and before there was any general reaction. He limits its use, however, to hospital practice.

It will be, of course, interesting to see what these authors say of the administration of mercury, which has always been a prominent remedy in British practice, and which, as shown by the Dublin debate, still has warm friends who testify to the benefits derived from it. Dr. Winckel pleads lack of experience in regard to it, but gives the names of many who advise it. His favourite remedy, after those we have mentioned, appears to be digitalis, pushed until the pulse is reduced in frequency and the temperature lowered. Dr. Hervieux, however, reposes a very considerable amount of confidence in mercury when pushed to salivation, and prefers inunction to any other mode of administration. After an emetic of ipecac, after repeated cupping, or flying blisters, until the pain is allayed, he has recourse to mercurial inunctions.

"I continue them with perseverance until salivation is produced. Arrived at this point, I suspend them; and I will remark that when salivation is effected, a notable amendment is at the same time produced in both the local and general symptoms."

Sulphate of quinia, in large doses, has been the leading treatment in many epidemics, and by able men. It received marked attention from the experience of Beau, who presented it to the Academy of Medicine in 1856,

[1] The author quotes from Hagspiel the fact that after application of ice to the abdomen during one hour the temperature of the rectum fell from 29.8° to 29.2° (=1.6° F.).

[2] Traité d'Accouchements, p. 1171.

but we find no testimony here in favour of it. Dr. Winckel barely mentions it as used in this way. Dr. Hervieux says that Delpech and Tarnier, in the latter part of the year 1856, used the remedy in fourteen cases, according to Beau's plan, but without a single success.

"I also made much use of the sulphate of quinia in the early years of my sojourn at the Maternity, and I must declare that in spite of my perseverance with it, in spite of the large doses in which I prescribed it, I never obtained at that time a case which I was justified in attributing to it. In grave cases it was completely impotent."

Nevertheless he found cases in which he believes it of service; they are those in which the rigors are repeated, also those in which "the thermometer and the pulse indicate towards night a febrile movement sufficiently marked to give to the disease a remittent form." Encouraged by good results in these cases he has renewed his observations of the remedy as lately as 1869, giving it in doses of from sixty centigrammes to one and a half gramme, and carefully noting the results. We believe ourselves justified in presenting his experience with so important a medicine:—

1. Independently of the habitual physiological effects, fulness of the head, roaring in the ears, etc. etc., those symptoms indicated by the term *cinchonism*, we have observed the coexistence of diarrhœa, generally moderate, one, two, or at most three liquid stools in the twenty-four hours.

2. This diarrhœa does not appear to fatigue the patients; it was even salutary in the sense that its appearance brought always a notable lowering of the pulse and temperature, an improvement (*détente*) in the general state, and a sedation in the pelvo-abdominal accidents.

3. It happened to us often to see in certain patients, after the administration of 16–25 grains of quinia in the evening, *under the influence of the diarrhœa* caused by this agent, a descent of the thermometer the next morning from 40° C. (104°) to 37° C. (98.6° F.), an enormous difference to any one who has learned the habitual variations of the temperature in lying-in women. From the time of this sudden change in the fever, the improvement continued without interruption, and convalescence was not delayed.

4. To obtain these effects from quinia, it should be used in certain conditions. The severe cases will not yield to it, because they resist everything. The benign cases prove nothing, for everything succeeds with them. Cases of medium intensity, and among these the ones in which the febrile element predominates, have appeared to us most susceptible to the influence of this therapeutic agent.

We have extended our remarks and quotations far beyond our intention, and, we fear, beyond the patience of our readers also. Yet there are many points yet deserving notice and attention. The chapters, for instance, in Dr. Hervieux's work, upon "Thrombus of the Vulva and Vagina," and upon "Sudden Death during Labour," subjects upon which so little is to be found in our own language, are especially interesting and valuable. But the importance of this class of diseases, and the interest attaching to the points we have selected, have already led us too far. We trust that the knowledge given in the two most recent books upon the subject, and of the views of two authorities so high as these two writers, will be accepted as, at least, some consideration for our trespass. J. C. R.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIV.—*First Medical and Surgical Report of the Boston City Hospital.* Edited by J. NELSON BORLAND, Physician; DAVID W. CHEEVER, Surgeon. Large 8vo. pp. 688. Boston: Little, Brown & Co., 1870.

THIS volume has been issued, as regards mechanical execution and artistic illustrations, in so very costly a manner, as to justify the inference that this hospital has been endowed by the citizens of Boston with extreme liberality, thus presenting a striking contrast to the limited means of most other hospitals in this country, which, indeed, have not sufficient funds to satisfy the urgent claims of charity, much less to publish reports, except of the briefest kind and in the most modest style.

These reports were prepared by the medical staff at the request of the trustees of the hospital, who desired "an enlarged and consolidated report," which should be of general interest to the medical profession. The volume is prefaced by a history and description of the City Hospital, from which we learn that the building was begun in 1861 and completed in 1864, and consists of a central building which connects by corridors with two pavilions. It has also a contagious ward and out-patient building, a smallpox hospital, and cholera wards. The hospital accommodates 230 patients.

The opening paper of the volume is on—

Perinephritic Abscess; its Complications and its Treatment, by HENRY J. BOWDITCH. This extremely interesting paper is a clinical study of ten cases of perinephritis, seven of which are published for the first time. In none of the works on practice of medicine in our language is any but the most meagre notice of this disease to be found, and we therefore think that a sketch of its clinical history, diagnosis, and treatment will be of interest to our readers. For the material for this we are chiefly indebted to Dr. Bowditch's article, the title of which heads this paragraph, and to an extremely valuable paper on the subject by Trousseau, which appeared in *Schmidt's Jahrbüch.* for 1865.[1]

Perinephritis is an inflammation of the adipose tissue surrounding the kidney. As regards the locality of the disease there can be no doubt, and we are therefore surprised to find that Dr. Flint, an authority usually so very accurate, has defined it an "inflammation of the peritoneal covering of the kidney."[2]

The *clinical history* of the disease may be given as follows: If the perinephritis arise in the course of a kidney affection, we have the peculiar symptoms belonging to that affection, and in addition pain, swelling, and redness in the region of the loin. But frequently the kidney does not participate in the disease. In some cases it comes on after unusual labour; or it may be the result of injury. The disease usually manifests itself by slight soreness, or sharp, or it may be dull, heavy pain in the loin of the affected side. This pain may be paroxysmal, and it generally increases in severity up to the time of the evacuation of the abscess. In addition to the pain, there appear rigors, followed by fever and loss of appetite, weakness, and constipation. The urine is generally unaffected in cases uncomplicated with renal disease. In from about eight to fourteen days the characteristic local appearances set in—a tumour, evident to the sight and touch, in the normal depression between the crest of the ileum and the edge of the thorax, with redness of the skin, œdema, and

[1] Bd. 126, s. 299.

[2] Practice of Medicine, third ed., p. 745.

tenderness on pressure; finally, distinct but deep fluctuation is detected; or, instead of the fluctuation, we may only obtain a soft, slightly elastic, doughy feeling. In some cases which have been observed, the abscess was so large as to reach nearly to the umbilicus. The renal tumour, when there exists a passage between the abscess and the urinary tract, may diminish in size every few days, with a coincident increase of pus in the urine (as noticed every third day in Case 5 of Dr. Bowditch). Lameness, with contraction of the thigh, the result of the burrowing of pus along the course of the psoas muscle, was observed in a number of cases. With the formation of pus, hectic becomes marked, and delay in opening the abscess will now endanger the life of the patient.

The results which may follow in the course of perinephritis are various. Sometimes the inflammation undergoes resolution; most generally, however, it advances to suppuration, forming an abscess, which may point externally in the region of the loin; or in cases of delayed opening, the pus may burrow downward along the track of the psoas muscle to the groin, or pass around to the gluteal region, to the trochanter minor or the hip-joint; or it may obtain exit by perforating the bladder, vagina, or, very rarely, the colon. In two cases in which this last result ensued, emphysema of the cellular tissue was observed,[1] and was due probably to the escape of gas from the intestine. In other cases the pus advances upwards along the course of the diaphragm into the pleural cavity, constituting an empyema; or, if pleural adhesions exist, into the bronchi, giving rise to grave pulmonary symptoms. The emptying of the abscess by any of these ways relieves the abdominal symptoms, and the walls of the abscess may contract.

Of the complications which occur in the course of this disease, the thoracic are of most frequent occurrence; they may come on in an entirely insidious or latent manner, and they should always be sought for even when the symptoms point exclusively to the abdomen, because the fact of the existence of abnormal thoracic signs has an important bearing on the treatment and prognosis of every case of perinephritic abscess. On the other hand, the thoracic symptoms may completely mask the renal. In two of Dr. Bowditch's cases they were the *sole* symptoms for which he was summoned in consultation; "they masked all others, and had become in reality the most important, and alone called for treatment, and they were the chief cause of death."

The *diagnosis* of perinephritis rests mainly upon the peculiarity of the pain, the fever, and the inflammatory swelling. *Typhus* fever in its early stage has similar pain and fever, but has not the characteristic swelling. *Neuralgia* runs its course without fever. *Nephritis* and *calculous pyelo-nephritis* are accompanied with renal colic, violent nausea, and vomiting; the pain, however, leaves immediately after the passage of the calculus into the bladder, and only when the stone obstructs the ureter, so that the flow of the urino-purulent fluid is impeded, is the diagnosis uncertain. Under these circumstances, however, a pyelo-nephritis may lead to the establishment of a perinephritic abscess.[2] From *Hydronephrosis* and *cancer of the kidney* the diagnosis is not difficult, since both run an essentially chronic course. The former, it is true, yields a sense of fluctuation, but then the tumour is frequently lobulated, and runs its course without fever, and cancer is characterized by the hardness of the tumour and frequent and profuse hæmaturia. *Tumours of the liver* are movable with respiration. *Tumours of the spleen* distinguish themselves by their sharp boundary. *Perityphlitis* is confined to the right iliac fossa and the inferior pelvis, but rarely advances into the region of the loin, and there only can give rise to the symptoms of perinephritis. *Fecal tumours* are preceded for some time by sluggishness of the intestines, and the tumour is hard on palpation, and diminishes after the use of purgatives. *Fecal abscess*, if perforation occur, is characterized by the fecal smell and intestinal flatus.

Sometimes, as before mentioned, the symptoms of perinephritis, when seen in a later stage, are entirely masked by those of the complication. In two of Dr

[1] Schmidt's Jahrbüch., 1865, Bd. 126, s. 299.

[2] As observed in case 13 of Trousseau, op. cit. s. 302.

Bowditch's cases (cases 4 and 8), when called in, he found his patients suffering as in an advanced stage of phthisis, with orthopnœa, and at times having copious discharges of fetid sputa. From an inquiry into their history, he found that this condition was the result of the emptying of a perinephritic abscess into the lung.

The *prognosis* of primary perinephritis occurring in otherwise healthy persons is favourable, provided that the abscess is evacuated sufficiently early to prevent any complication arising. In other cases it depends upon the gravity of the complication.

The danger that exists of chest complications in connection with and in consequence of the abscess below the diaphragm is a point upon which Dr. Bowditch lays particular stress. "These complications are often very latent in their progress, and they really at times become the more important features of the case; they may sometimes cause death, and they are certainly liable to produce long-continued, wasting diseases, which have a very slow or, perhaps, imperfect cure, even if absolute death do not result with so-called tuberculosis of the lungs, etc."

The *treatment* should have for its object, if the patient be seen in the early stage, the resolution of the inflammation. To this end embrocations, subcutaneous injections of morphia or atropia, wet cups, flying blisters, etc., to the loins, and purgatives should be administered. If the inflammation should advance to suppuration, and the fever and chill increase, then, when the first physical signs of pus are present (swelling, œdema, pain, redness, fluctuation, etc.), the abscess should be opened. The importance of an early and thoroughly radical operation, whereby the pus in the abscess should be allowed to escape, is strongly urged by Dr. Bowditch. The operation, he thinks, may be required even before the common rules of surgery, as now held, would permit of it. These rules suggest delay till some pointing or actual distinct fluctuation occur in some part of the region occupied by the inflammation. This delay, if strictly adhered to by surgeons, Dr. Bowditch believes, will be fatal in its effects upon many future cases. The existence of thoracic physical signs is an important indication for the operation, as it proves that the inflammation is extending upwards, and might, at any time, show itself by very serious thoracic symptoms.

All of Dr. Bowditch's cases fully sustain the advice of an early puncturing, or more free laying open of the abscess. His ten cases he arranges into three classes: 1st. Those in which the pain, swelling, fluctuation, etc., in the renal region plainly indicated the operation, which gave immediate and great relief (two cases). 2d. Those where the indications for operating were much less—in which the tumour was deep-seated, was not distinctly fluctuating, was not pointed, and did not present any of the usual signs of a "ripe abscess," yet in all of them the operation was crowned with success (three cases). In two of the cases all serious symptoms disappeared after the operation, although no pus was discharged at the time, and the operators considered that their labours had been in vain. In this, however, they were mistaken, "for in both instances a suppuration was induced, under which the original tumour gradually *melted away*." 3d. Those in which no operation was performed upon the nephritic region (two cases). Death occurred in one case, and long-continued disease, with possible death by phthisis, may be the ultimate result in the other case.

The final inferences which Dr. Bowditch draws from his cases, and which will govern him hereafter in the treatment of perinephritic abscess, are as follows:—

"*First.* Operate as early as possible after a distinct tumour is formed, and the other signs seem not to militate against the idea of inflammation being its cause. Especially shall I urge this measure as soon as a tumour forms in the renal or the iliac region, extending from front to the back, and which is large enough to be felt easily in those parts by two hands placed, one in front of the abdomen, and the other in the renal region. I shall urge this, even if there be none of the usual signs of actual suppuration, such as fluctuation, pointing, etc.

"*Second.* For a still greater reason shall I urge the operation in such cir-

cumstances, if there be any affection of the corresponding pleura or lung, even if the thoracic symptoms be slight; and, *a fortiori*, if those signs be manifest and severe.

"*Third.* In case there be little or no discharge of pus at the time of the operation, I shall advise the keeping the wound open, and that suppuration should be promoted either by a seton or by tents, etc.

"*Fourth.* I would urge this early opening of the abscess in the same way, and for a similar reason, that modern surgery directs the free opening of a felon on the finger, to relieve the unusual distension of the surrounding parts, and to prevent serious burrowing of pus, and its getting into the peritoneum, bladder, or rectum, below, or into the pleura or lung above. * * * * If ever there be occasions for a *cautious boldness* on the part of a surgeon, these abscesses present them."

The mode of operating is of importance. In five of Dr. Bowditch's cases the bistoury was used, and a free incision made to a certain depth, opening the abscess in four of them, while in the fifth, neither by bistoury nor by the exploring trocar, subsequently passed in various directions, could pus be procured. In all, the operation was the first step toward cure, although in one (of the four) severe secondary hemorrhage occurred. In two cases the trocar was used, but in both the subsequent keeping open of the wound was found necessary. In one of these it was done by means of a seton three inches in length, and introduced ten days after the first tapping. As regards the relative value of the two modes of procedure, Dr. Bowditch agrees with Trousseau in deeming the bistoury the more dangerous, from its causing a liability to secondary hemorrhage; it is more speedy, however, though perhaps not more effectual, than the trocar or seton.

Of course the opening should be made where the tumour points. Dr. Bowditch advises that the renal region be chosen in preference to all others, in case the tumour lies in part in that region, for here there is less liability of wounding the peritoneum than when operating more in front.

Dr. Bowditch thinks that his arguments and conclusions in reference to perinephritic abscess are equally applicable to pericæcal abscess, and justify the following opinion: "1st. That abscesses about the peritoneal cavity tend usually either to death or long-continued disease; unless, 2d, an earlier operation be done than the usual rules of surgery will at present allow."

Cases of Pneumonia, by J. N. Borland. This paper is based on a study of 190 tabulated cases of pneumonia, admitted and treated expressly for this disease in this hospital in its first lustrum. Of these cases 118 were males and 72 females, and the average age of both sexes was 31½ years. These cases of pneumonia, Dr. Borland states, are 19½ per cent. of the entire number of patients (3709) admitted into this hospital, and "this may be taken as an approximation to the amount of pneumonia which ordinarily exists in this city." This startling statement we are happy to find the author's own figures disprove; he seems to have forgotten that lesson of his youth, which taught him that to reduce a vulgar fraction to a decimal, "divide the numerator by the denominator, and the quotient will be the decimal," which, the cases of pneumonia being $\frac{190}{3709}$ of the entire number of cases admitted, would give us about 5⅛ per cent. as an approximation to the amount of pneumonia which ordinarily exists in Boston. This percentage appears to be in excess of that which generally prevails in the large hospitals of other cities.

The cases of pneumonia were admitted according to seasons, as follows: In the winter, 62; the spring, 64; in the summer, 19; in the autumn months, 45. Pneumonia is thus seen to be most prevalent during the spring months, when dampness is superadded to a low temperature. 107 of the cases were of pure pneumonia, while 83 were complicated with other diseases, chiefly as follows: with phthisis, 22; pleurisy, 13; bronchitis, 5; rheumatism, 11; typhoid fever, 11. The duration of the pneumonia in these tabulated cases, calculated from its commencement (the rigor) to its disappearance (covering the time of convalescence) averaged in the uncomplicated cases, 34½ days; in the complicated cases, 42 days.

Of the 107 uncomplicated cases 44 were double, 59 single, and in 4 the locality

is not stated. Of the cases of double pneumonia the two lungs were equally affected in 17; in 19 the right lung was most involved; in 8 the left lung. Of the cases of single pneumonia the right lung was involved in 40 instances, the left lung in 19. Of the 83 complicated cases 37 were double, 46 single. Of these cases of double complicated pneumonia the two lungs were equally affected in 17, in 9 the right was most involved, in 11 the left. Of the cases of single complicated pneumonia the right lung was involved in 22 instances, the left lung in 24.

Hence it will be seen that in the cases of uncomplicated pneumonia the right lung has shown the stronger tendency to become diseased in 59 cases, the left in 27; while in the complicated cases the right lung showed the stronger tendency in 31 (not 39, as stated in text) cases (37 per cent.), the left in 35 (42 per cent.). The small percentage in favour of the left lung observed in the complicated cases, it is thought, may be owing to the character of the complicating disease, which in nearly one-half of the cases was pulmonary, and of these 22 were phthisis. This view is strengthened by Dr. Bennett's statistics of his complicated cases,[1] which show a much greater tendency to disease of the right lung only than exists in his uncomplicated cases. Thus in 25 complicated cases the percentage was as follows: right lung, 64; left lung, 20; both lungs, 16.

Dr. Borland's statistics give a smaller percentage of cases in which the right and the left lung are attacked, separately, and a higher percentage of cases in which both lungs are attacked, than those of other authors, as will be seen from the following table, which we have made. (In support of his own figures, the author states that in Dr. Flint's[2] cases the right and left lung suffered in "nearly the same proportion observed in our series," which, as will also be seen, is incorrect. Dr. Borland's arithmetic seems here to have again deceived him.)

Authority.	Number of cases.	Right lung, per cent.	Left lung, per cent.	Both lungs, per cent.	Reference.
Fuller	139	$55\frac{4}{10}$	$36\frac{6}{10}$	$7\frac{9}{10}$	Fuller on Lungs, p. 243.
Fuller	1710	$53\frac{1}{10}$	$30\frac{5}{10}$	$16\frac{3}{10}$	" " " "
Bennett . . .	129	48	$28\frac{7}{10}$	$23\frac{3}{10}$	Bennett's Pract. Med., p. 698.
Flint	121	$61\frac{1}{10}$	$31\frac{4}{10}$	$7\frac{4}{10}$	Am. Jour. of Med. Sci., N. S., vol. xli. p. 28.
Borland . . .	186	$33\frac{3}{10}$	$23\frac{1}{10}$	$43\frac{6}{10}$	Med. and Surg. Rep., Bost. City Hosp., 1st Series, p. 112.

In the above table are statistics of 2285 cases of pneumonia, in about 50 per cent. of which, in round numbers, the disease was limited to the right side, in about 30 to the left, and about 20 per cent. were cases of double pneumonia.

The greater proportion of these cases, the author states, have been treated by the restorative method of Dr. Bennett; the essential part of which "consists in the rest, nourishment, and support given to the body throughout."[3] In addition, the "poultice-jacket" of flaxseed, which has been so highly, and we think justly, recommended by Dr. Chambers,[4] was used in many cases. When convalescence seemed likely to be protracted from any cause, cod-liver oil, iron, quinia, etc., were given, as judged necessary. In a number of cases, wine of antimony was given in minute doses of six to eight drops every hour, with the belief that the capillary bloodvessels are reduced in size by the action of

[1] Practice of Medicine, p. 698.

[2] Am. Journ. of Med. Sciences, January, 1861, p. 28.

[3] The Restorative Treatment of Pneumonia, by J. Hughes Bennett, M.D., 3d ed., p. 52.

[4] Lectures Chiefly Clinical, by Thomas King Chambers, M.D.

antimony on the vaso-motor nerves, and that thus the inflammation is summarily put an end to. In the cases in which it was tried, the drug was found, the author states, to act like a true tonic. Its use, of course, rendered the treatment "mixed" and no longer purely "restorative," and its value we shall discuss further on.

The results of the treatment of the cases were as follows: of 190 cases treated, 152 were cured, 10 relieved, 1 not relieved (discharged by request), and 27 died; or one death to every $7\frac{1}{27}$ cases. Of the above cases 107 were uncomplicated; of these, 95 were cured, 2 relieved, and 10 died; or one death to every $10\frac{7}{9}$ cases. These statistics are far from being as favourable as those of Dr. Bennett, the advocate of "the restorative method." The restorative treatment (pure) in his hands has been attended by a mortality of only 1 death in every $32\frac{1}{4}$ cases. "But when it is considered," states Dr. Bennett,[1] "that four deaths resulted from pathological complications unconnected with the pneumonia, this treatment may be said to render the mortality in true cases of pneumonia *nil*." Of 105 uncomplicated cases occurring consecutively in the wards of the Royal Infirmary of Edinburgh, under Dr. Bennett's care, during a period of sixteen years, all recovered. It is proper, however, to state that, as generally occurs in all similar cases, we know of no statistics of this treatment given by any other author, which are as favourable as those given by its chief advocate.

Of the 22 cases treated with minute doses of antimony frequently repeated, 17 recovered, and 5 died; or one death in every $4\frac{2}{5}$ cases; a result very similar to that obtained with large doses of tartar emetic by Rasori (648 cases with 143 deaths, or one in every $4\frac{1}{2}$ cases), and not so good as obtained by Thielmann (110 cases with 12 deaths, or one in every $9\frac{1}{6}$ cases), and by no means so good as the author himself obtained by the restorative treament, notwithstanding his statement that "our cases treated in this way [with antimony] have been very satisfactory."

We cannot close our notice of this paper without adverting to the number of numerical inaccuracies which it contains. A statistical paper, above all others, should be free from such blots.

Treatment of Acute Rheumatism, by JOHN G. BLAKE. The author has tabulated in this paper 300 well-marked cases of acute articular rheumatism from over 500 admitted to the hospital during the first five years of its existence, with a view of determining the value of some of the methods of treatment now advocated. The treatment here used may be briefly divided into the alkaline and non-alkaline; the latter including iodide of potassium, colchicum, opium, guaiacum, syrup of lime, and blistering, according to the method of Dr. Herbert Davies.

The alkaline treatment of Dr. Fuller (see number of this Journal for April, 1869, p. 535, and July, 1869, p. 196), somewhat modified by the diminution of the dose (℥ss to ℥ij of salts of potassa and soda every three or four hours, until urine becomes alkaline), was used in 125 cases. The chief objection to this treatment was found to be the irritability of stomach and bowels to which the alkalies give rise when taken in doses of a drachm and upwards, and which rendered, in the author's experience, Dr. Fuller's treatment inapplicable to the majority of cases.

In all the cases attention was paid to local treatment, either by the application of opiated alkaline lotions, or of iodine, laudanum, hot sweet oil, etc. etc. When a single joint, only, was affected, it was found that encircling the limb in its neighbourhood with blistering plaster, and producing decided vesication, did, in most cases, give prompt relief, if not permanent cure.

Of the 125 cases treated by alkalies 18 developed disease of the heart during their stay in the hospital; of these, 13 were endocardial, and 5 were pericardial; two of the latter terminated fatally. The endocardial murmur is said to have disappeared in seven of the cases before their discharge. The patients were detained in the hospital from seven to fourteen days after the rheumatism

[1] Op. cit., p. 46.

was cured. The average stay in the hospital of the patients under the alkaline treatment was 24 days.

By the non-alkaline plan 175 cases were treated. In 18 of these some form of heart complication was developed during their stay in the hospital, and in 5 of them the murmur had disappeared at the time of discharge. The average stay in the hospital of the cases under this treatment was 35 days.

From the above statistics it is evident that the best results were obtained from the alkaline treatment, and in the inference drawn therefrom as regards the value of the alkaline treatment, we are confirmed by the statistics of Drs. Fuller[1] and Dickinson.[2]

We regret that this paper, also, is blurred—we might even say, its value impaired—by numerical inaccuracies. The text, the tables, and their summary fail to agree in several important particulars; and errors discovered in some of the author's figures give us a feeling of distrust, unjust it may be, in the accuracy of all of them.

Treatment of Skin Diseases, by HOWARD F. DAMON. This paper is a report of the variety and number of skin diseases treated among the out-patients of the hospital. Eczema appears to have been the most frequent affection treated (about one-fourth of the entire number), then impetigo, syphilodermata, furunculosis, erythema, etc. As the treatment of the various cutaneous diseases which the author notices is not mentioned, we fail to see the propriety of entitling the article, "*Treatment* of Skin Diseases."

Typhoid and Typhus Fever, by J. BAXTER UPHAM. In this interesting article are tabulated 152 undoubted cases of typhoid fever occurring in 86 males and 65 females. The sex of one, a child, is not stated. The age was noted in 148 cases; the average age of both sexes was $22\frac{856}{1000}$ years, being about one and a half years greater than the mean age of 1772 cases observed in the London Fever Hospital (twenty-one and one-fourth years),[3] and nearly half a year less than the mean age of 291 cases observed in the Massachusetts General Hospital.[4]

As regards the season of the year when admitted, we find that 27 cases were admitted in the spring, 35 in the summer, 74 in the autumn, and 16 in the winter months. The average duration of the cases from the first access of the premonitory symptoms to convalescence was, for the males, $32\frac{1}{4}$ days; for the females, $36\frac{931}{1000}$ days, being much larger than the average in 255 cases given by Jackson (22.019),[5] or that given by Murchison (from three to four weeks). The average duration of convalescence was seventeen days.

Some of the more marked symptoms, in the early stages, were as follows, in the order of their frequency: Headache, chills, anorexia, pain in the back and limbs, diarrhœa (51 cases), malaise, sense of weakness, epistaxis, abdominal pains, vertigo, constipation (23 cases), etc. Of the more prominent symptoms, in the advanced stages, the following were noted in the order of their frequency: Rose spots, abdominal tenderness, constipation (63 cases); increased heat of surface, insomnia, tympanitis, cough, diarrhœa (48 cases); gurgling, flushed face, delirium, brown and dry tongue, etc. The large proportion of cases in which constipation existed in the advanced stages of the fever, is very unusual, and the author cannot otherwise explain the frequent mention of a symptom so much opposed to previous observation and experience, than by the "belief that in very many cases, absence from diarrhœa, or what would in most diseases be termed a normal quietude of the bowels, has here been put to the account of constipation;" but this explanation does not, to our mind at least, satisfactorily account for the unusual proportion noted. In but 7 of 100 cases noted by Murchison, did diarrhœa not exist at any stage of the disease; and in but 4 was constipation observed.

The average time at which the rose-coloured spots were first seen, was

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[1] On Rheumatism, Phila., 1864, and Am. Journ. of the Med. Sciences, 1869, N. S., vol. lvii. p. 535.

[2] Lancet, 1869, vol. i.

[3] Murchison on Continued Fevers, p. 409.

[4] Report of Cases occurring in Mass. Gen. Hosp., by James Jackson, M.D., p. 25.

[5] Op. cit., p. 31.

between the twelfth and thirteenth days, which is later than is given by Murchison (between the seventh and twelfth day, inclusive).

Of the 152 cases recorded in the tables, 131 recovered, and 21 died (13¾ per cent.). This proportion is the same as was had in 303 cases treated in the Massachusetts General Hospital,[1] and is much less than was obtained in 2505 cases treated in the London Fever Hospital, in fourteen and a half years, the mortality there being 18½ per cent.[2]

The most frequent complications noted were pneumonia, bronchitis, and incipient phthisis. The treatment was mainly expectant.

The number of cases of *typhus* fever, of which a tabular history is given, is 38. Of these, 20 were males, 18 females. The average age of the cases was $25\frac{66}{100}$ years; of the 10 fatal cases, the average age was $36\frac{12}{100}$ years. 10 of the cases were admitted in the winter, 10 in the spring, 15 in the summer, and 3 in the autumn. The average duration of the cases, counting from the first access of the premonitory symptoms to the time at which convalescence was established, was $18\frac{95}{100}$ days.

Some of the more marked symptoms of the early stages were, in the order of their frequency, as follows: Headache, pain in back and limbs, anorexia, chills, increased heat of surface, malaise, constipation, soreness of muscles, vomiting; of the advanced stages, mulberry-coloured eruption, hot skin, brown and dry tongue, constipation, delirium, dusky hue, suffused eyes, sordes, flushed face, foul odour of surface. The onset of the disease was generally sudden and severe; the approach of convalescence was well marked, and heralded by a decided relief and subsidence of the symptoms; it was sometimes accompanied with profuse diaphoresis. The time of the first appearance of the rash was not noted with sufficient accuracy to warrant any reliable deductions. Murchison places it between the fourth and seventh days, usually on the fourth or fifth. Of the 38 cases, 28 recovered, and 10 died (26⅓ per cent.), a mortality in excess of that observed in the cases admitted in the London Fever Hospital from 1848 to 1862 (4787 cases with 1000 deaths, making a mortality of nearly 21 per cent.).[3]

The last medical paper of the volume, on *Peri-Uterine Inflammation*, by A. D. Sinclair, is a clinical report of 23 cases, which present details of much interest to the practitioner.

We have thus passed in review the papers which form the medical portion of the first series of the Boston City Hospital Reports; some of them, as our readers will see from the analysis given, are valuable contributions to medical literature, the others—we regret to be compelled to express it—do not come up to that standard of excellence which the nature of the volume, the resources of the hospital, and the reputation of its staff lead us to expect. I. M. H.

We shall now invite the attention of our readers to those papers which appear to be particularly addressed to *surgeons*. These papers are seven in number, and, with two exceptions (the reports of the Eye and Ear Departments), are all from the pen of the same writer.

On Excisions of the Joints, by David W. Cheever. During the past five years, twenty-eight excisions of the larger joints have been done at the Boston City Hospital, and the ratio of mortality of the whole number is given as ".43 per cent.," which, taken literally, would imply that about an eighth of one patient had died; by referring, however, to the cases as given in detail in the succeeding pages, our minds are relieved by finding that in reality eight patients died, the death-rate being, therefore (according to our computation), 28.57 per cent. The elbow was excised ten times, with four subsequent amputations, and two deaths (one after amputation); the wrist once, with a fatal termination; the hip eleven times, with four deaths; and the knee six times, with one death, and two subsequent amputations. The recoveries, therefore, were for the elbow, five; for the wrist, none; for the hip, seven; and for the

[1] Jackson, op. cit., p. 24.
[2] Murchison, op. cit., p. 528.
[3] Murchison, op. cit., p. 217.

knee, three. Scrutinizing the hip excisions a little more closely, we find that of the seven patients reported as recovered, only *two* were able to walk without support, and had their wounds entirely healed; two more walked without support, though sinuses persisted; one walked with a cane, one with crutches, and one was still confined to bed when the report closed. Dr. Cheever differs from the majority of modern writers upon hip-joint excision, in advising that the greater part of the trochanter major should be left, and that the acetabulum should not be gouged, even although it be found diseased. On page 93, Dr. Cheever gives what professes to be a "*résumé* of all those who have published tables" of hip-joint excisions, beginning with Fock, and ending with himself; but ignores the table of 242 cases (nearly as many as are embraced in Hodges' and Good's tables put together), which were published in 1869, by a Philadelphia surgeon, in an obscure and now defunct serial, called the "Pennsylvania Hospital Reports," as well as the still more extended statistics published by the same writer in the number of this Journal for January, 1870 (page 209). The more recent statistics of Dr. Leisrink[1] have, we suppose, appeared since the termination of Dr. Cheever's labours; otherwise (being published in a foreign language, and at a distance of several thousand miles) the labours of the German surgeon would, we are confident, have received due notice.

This paper is adorned with one lithographic and two photographic illustrations.

Displacement of the Upper Jaw, by DAVID W. CHEEVER. In this paper, Dr. Cheever describes the case of a patient from whom he successfully removed naso-pharyngeal polypi, by the method known as *osteo-plastic resection*, on two separate occasions; in another case, in which the operation involved both upper maxillæ, death ensued on the fifth day. Dr. Cheever's operation differs from that of Langenbeck, in that while the latter surgeon temporarily displaces the maxilla *inwards*, Dr. Cheever bends it *downwards*, into the mouth. The patient being etherized, an incision is made from just below the inner canthus of the eye, downwards, following the naso-labial fissure, to the corner of the mouth; the inner flap being dissected up to the symphysis, and the outer so as to expose nearly the whole upper jaw, the maxilla is divided by a narrow-bladed saw, transversely, about half an inch below the floor of the orbit. The saw is then plunged into the zygomatic fossa, and the front and back walls of the antrum sawn through "horizontally," the line of section passing from just below the articulation with the malar bone, to the anterior nares at the lower end of the nasal bone. The central incisor of the affected side being extracted, the alveolus is divided with cutting-pliers, the hard and soft palate being untouched. Displacement is then readily effected by seizing the alveolar process with forceps, and depressing the bone.

By the term "*horizontally*," in the description from which that above given is abridged, we suppose *transversely* is meant; the application of a saw to the skull in a *horizontal* direction, might, unless the position of the head itself were carefully watched, lead to rather unpleasant consequences.

A lithographic plate accompanies this communication.

Reproduction of the Tibia, by DAVID W. CHEEVER. This paper contains an account of one case, with a brief reference to two others, in which subperiosteal resection was practised upon the shaft of the tibia. In the case which is given in detail, almost the whole diaphysis, together with the lower epiphysis, were removed, the length of bone excised being nine inches. Eight months after the operation there was considerable reproduction of bone, and the patient was able to walk by the aid of mechanical support. This case is illustrated with a lithographic plate and a wood-cut.

Ophthalmic Report, by HENRY W. WILLIAMS. This short paper gives tables of "ophthalmic operations" and of "ophthalmic out-patients from June 1st, 1864, to June 1st, 1869." The importance of the ophthalmic department of the hospital may be inferred from the fact that in the five years, the statistics of which are embraced in these tables, as many as 833 operations were performed,

[1] Archiv für Klin. Chirurgie, Bd. XII., Heft I., 1870.

no less than 269 of these having been for cataract. The results of the cataract operations were as follows:—

Operation.	Total.	Successful.	Unsuccessful.	Partially successful.
Flap extraction with suture .	102	85	9	8
" " without suture	104	87	10	7
Scoop extraction . . .	12	9	3	
Discision	51	43	3	5
Total . . .	269	224	25	20

"Those cases of extraction are reported as successful where the patient was able to read ordinary print."

Our readers will observe, from the above statement, that Graefe's operation does not appear to have been resorted to in any case, while the results of the traction method (25 per cent. of failures) were certainly not very gratifying. With regard to the use of the *suture* after flap extraction, an addition to the ordinary operation, introduced by Dr. Williams himself, the author remarks that this "modification, * * * practised on a large scale at this hospital, has given such results as to encourage the hope that the safety of such operations may thus be increased." Dr. Williams will pardon us for saying that the statistics here published do not seem to us at all conclusive upon this point—the extractions without the suture having furnished a slightly larger percentage of successes than those in which this modification was employed. In the hands of so skilful a surgeon as Dr. Williams, we doubt not that either plan might be adopted with equal safety; but we cannot help thinking, that, for less practised operators, every additional complication of the manual procedure is a positive disadvantage.

Report of the Aural Department, by J. Orne Green. The period to which this report refers extended over 4½ months only, the number of patients treated during this time being 158. A tabular list of cases is given, and some brief but judicious remarks are appended, in which the author discusses the treatment of aural polypus, of acute purulent inflammation of the tympanum, of catarrh of the Eustachian tubes, etc. In the treatment of the latter affection, Dr. Green has derived great advantage from the application of astringents by Gruber's method; this consists in injecting a small quantity of the medicated fluid through the nostril into the pharynx, the head being inclined to the affected side, so as to bring the solution into contact with the aperture of the Eustachian tube; by inflating the tympanum, a few drops of the liquid can be made to enter its cavity.

A curious case of *neuralgia* of the ear is mentioned, in which the pain apparently arose from and subsided with scrofulous inflammation of the cervical lymphatic glands.

Two Cases, by David W. Cheever. I. *Encephaloid Tumour of Tonsil.* II. *Occlusion of the Vagina.*

I. The first case is one of much interest. The patient was a sailor aged 43, who suffered from a rapidly growing tumour of the left tonsil, which after removal was found to be of the nature of medullary cancer. The treatment adopted in this case was excision by external section, and the result was extremely satisfactory, the wound closing entirely in thirty-one days. The operation consisted in making two incisions, one parallel with the fibres of the sterno-mastoid muscle, and another joining the first, and passing along the lower border of the jaw; the flaps thus marked out being dissected up, an enlarged and cancerous lymphatic gland was first enucleated, and the dissection then continued until the tonsil was reached; the digastric, stylo-hyoid, and stylo-glossus muscles were all divided, and the pharynx opened by picking apart the fibres of its superior constrictor with a director. The diseased tonsil was readily enu-

cleated with the finger. Twelve ligatures were required, and a single suture was used to close the transverse, or, as Dr. Cheever calls it, "horizontal" incision. Slight facial paralysis existed for a short time after the operation.

II. The result of Dr. Cheever's second case was as melancholy as that of the first was gratifying. Misled by the statements of the patient that on a previous occasion she had been operated upon with success, an attempt was made to reach what was supposed to be the os uteri, by dissecting between the bladder and rectum; the operation was brought to a sudden termination by the discovery that the peritoneal cavity had been opened, and death from peritonitis followed four days afterwards. A post-mortem inspection revealed a malformation of the womb, analogous to that described by Rokitansky as ', tripartite uterus;" the appearance of the specimen is shown in a wood-cut which accompanies the paper.

Surgical Abstract, by DAVID W. CHEEVER. In this paper of over 180 pages, Dr. Cheever discourses successively of aneurism, ligature of vessels, cases of cut-throat, tracheotomy, foreign bodies in the œsophagus, perineal section, lithotomy, radical cure of hernia, strangulated hernia, fractures, fractures of spine, compound fractures, and amputations. The limited space at our command forbids a detailed examination of this paper, which, we may mention, contains a number of tables compiled by Dr. Frank W. Draper, House Surgeon in 1868.

1. *Aneurism.*—Three cases of *popliteal aneurism* are narrated, one cured by the *flexion* method of Mr. Ernest Hart, and one by the application of *acupressure;* another case, treated by acupressure, having terminated fatally in the course of the fifth day. In a case of *innominate aneurism*, an operation was undertaken with the intention of tying the right common carotid and subclavian arteries; the carotid could not be found, and in passing the aneurismal needle behind the subclavian artery, the vein was ruptured, profuse hemorrhage ensuing, and cutting short the further progress of the operation; the patient died in two hours, not, however, Dr. Cheever thinks, from loss of blood, but from asphyxia due to the pressure of the aneurism on the trachea and recurrent laryngeal nerve.

2. *Ligature of Large Vessels.*—Thirteen cases, of which seven were fatal, are reported under this heading. The common carotid was tied four times, once successfully, and three times with a fatal result, in each instance from secondary cerebral complications.

3. *Cases of Cut-throat.*—Fourteen cases, with five deaths, are recorded. In one instance the pneumogastric nerve was severed, no marked symptoms occurring in consequence; the internal jugular vein was tied at the time of the patient's admission, and the common carotid six days later from secondary hemorrhage; death from pyæmia and cerebral abscess followed on the forty-second day.

4. *Tracheotomy.*—Fifteen cases are recorded, nine, with five deaths, being for croup, and six, with one death, for other causes.

5. *Foreign Bodies in the Œsophagus. Three Cases of Œsophagotomy.*—We observe with regret that the criticisms which we felt called upon to make (in reviewing Dr. Cheever's essay on Œsophagotomy) in the number of this Journal for April, 1869 (p. 511), do not appear to have given the author entire satisfaction; we regret this the more becauseit now becomes our painful duty to point out that, in the present version of his table of cases, Dr. Cheever has not profited as much as might have been hoped, from the suggestions which we then made to him. With regard to Syme's first and second cases, which we showed were "not fairly to be classed as cases of œsophagotomy," Dr. Cheever says: "We can only say that the distinguished surgeon places them under that caption in his works." With all due respect to Dr. Cheever, we think he might say more; he might say, for instance, that although Mr. Syme records these cases under the caption of "Œsophagotomy" (just as under the caption of "Fissure of the Anus" he records cases which he distinctly declares should be called, not fissures, but ulcers of the anus), yet that, in point of fact, in neither case was the œsophagus cut, the foreign bodies having escaped, in one instance partially, and in the other completely, through the walls of the gullet

into suppurating cavities from which they were removed. He might further add that, in recording these very cases, Mr. Syme asserts that "cutting through the coats of a sound œsophagus, for the removal of some foreign body lying within it, is an operation that can hardly ever be required, since before it is warranted there will almost necessarily have elapsed such a period of time as must allow ulceration and suppuration to be induced by the intruder, compressed, as it cannot fail to be, by the surrounding muscular fibres."[1] Indeed, until Mr. Syme met with his *third* case, in which he really did perform a true œsophagotomy, he would appear to have entertained very much the same opinion of the operation as that held by Sir Wm. Fergusson, who, though he describes how "the proceeding may be done in the dissecting-room," at least implies a doubt whether it be ever really called for in the actual practice of surgery.[2]

To show his readers that his labours are appreciated abroad, if not at home, Dr. Cheever adds a note to the effect that his table "has been incorporated into the second edition of Holmes's Surgery in England, and also into M. Terrier's monograph in Paris." M. Terrier certainly does speak of Dr. Cheever's production with the characteristic politeness of a Frenchman, and yet in the same breath, as it were, claims to have added "quelques faits"—Dr. Cheever, indeed, confessing that one case has been added by the foreign author. Mr. Durham, who contributes to the second edition of *Holmes's System of Surgery* a most exhaustive essay on "Injuries of the Neck," says of his own table of cases of œsophagotomy, that (the italics are ours) "in compiling it, free use has been made of the table in Dr. Cheever's excellent monograph, *than which, however, it will, I believe, be found more correct.*" This sentence, we may add, is *not* quoted by Dr. Cheever.

We must give the author credit for his foresight in one respect, which is that in the present version of his table, lest he should be caught tripping as before in the matter of references, he prudently omits the references altogether.

6. *Perineal Section.*—We should like very much to know what Dr. Cheever means by the following sentence: "The operation for perineal section, however performed, has been disclaimed by the distinguished surgeon who gave his name to it," &c. If Mr. Syme is the distinguished surgeon referred to, and this seems probable from the somewhat confused manner in which "Syme's operation for perineal section" is mentioned, we need scarcely remind our readers that *perineal section*, properly so called (*i. e.*, external perineal urethrotomy without a guide), was a well-known operation long before the days of Syme, having, indeed, according to Thompson,[3] been performed by Wiseman in the 17th century, and afterwards adopted by Solingen, Tolet, Colet, Petit, Ledran, Hunter, Grainger, Arnott, and many others; while "Syme's operation" (external perineal urethrotomy with a guide) was distinctly called by its introducer, not perineal section, but *external incision*, or *external division;* moreover, if Mr. Syme ever "disclaimed" this operation, the fact has escaped the attention not only of American surgeons generally, but of the most recent British authorities on the subject. With regard to "Cock's operation," which Dr. Cheever also calls "perineal section," it need only be said that Mr. Cock, in describing it, particularly deprecates any attempt to divide the stricture by perineal or other section, and, "for the sake of distinction," calls this method "tapping the urethra at the apex of the prostate, unassisted by a guide-staff."[4] Mr. Cock does *not* advise to "make a bold thrust into the perineal centre, carry the back of the knife down upon the finger in the rectum, until we open the membranous urethra, and then guide the knife on into the bladder," but expressly recommends that with a *double-edged* knife the urethra should be tapped *behind* the stricture (the lower extremity of the wound reaching "to within about half an inch of the anus"), and that then the knife should be *withdrawn*, a *probe-pointed*

[1] Observations in Clinical Surgery, 1861, p. 95.
[2] System of Practical Surgery, 5th ed., p. 566.
[3] Holmes's System of Surgery, 2d edit., vol iv. p. 973.
[4] Guy's Hosp. Reports. 3d ser., vol. xii. p. 272.

director guided into the bladder, and along the groove of this the canula passed, which is to be subsequently retained.

7. *Lithotomy.*—Five cases are reported, all being successful.

8. *The Radical Cure of Hernia.*—Twenty-five operations upon twenty-four patients (one having double hernia) are reported, Wood's method having been adopted in most instances. The twenty-four cases gave three cures, three "fair results," two deaths, and sixteen failures.

9. *Strangulated Hernia.*—Three cases were relieved by taxis, and ten were treated by herniotomy, the operation in seven of these being followed by death.

10. *Fractures.*—A table is given of 1046 cases of fracture. We cannot understand Dr. Cheever's arithmetic; 46 cases of fractured skull (on page 544) are reduced to 33 (on page 545); and the mortality of 12 cases, not trephined, is given as "59½ per cent." which is equivalent to saying that seven and fourteen-hundredths out of twelve patients died.

We observe that Dr. Cheever makes the not unusual mistake of saying Collis's instead of Colles's fracture.

11. *The Spine. Five Cases of Dislocation and Fracture of the Spine. Trephining the Spine in Two Cases.*—All of these cases ended in death, those in which trephining was resorted to proving fatal at least as rapidly as the others; yet Dr. Cheever thinks that he has discovered "reasons enough, surely, to follow up the operation of trephining the spine in an uncomplicated case." It will nevertheless, we think, require stronger arguments than Dr. Cheever's two fatal cases to establish spinal resection among the approved operations of surgery.

12. *Compound Fractures.*—Thirty-nine compound fractures of the *upper extremity* gave sixteen deaths (41 per cent.), and eighty-one of the *lower extremity* gave forty-nine deaths (60 per cent.). Dr. Cheever deprecates the performance of amputation before the establishment of complete reaction; and there can be no doubt that the statistics of the operation will be better where the cases are thus selected. We are not sure, however, that by always waiting "until reaction is well established," a certain number of patients will not be left to perish, whose lives might possibly be saved by a resort to the operation even during the existence of a moderate degree of shock.

13. *Amputation.*—The number of cases reported is 137, distributed as follows:—

Shoulder	11 cases,	7 deaths, or	63 per cent.
Arm	27[1] "	10 "	38 "
Forearm	17 "	2 "	12 "
Hip	2 "	2 "	100 "
Thigh	41[1] "	22 "	55 "
Leg	34 "	11 "	32 "
Foot	5 "	2 "	40 "

From the remarks upon "other surgical cases" we learn that four cases of *ovariotomy* all terminated fatally, and that while *pyæmia* caused death in thirty cases, it was recovered from in but one.

The concluding article embraces the *General Medical and Surgical Tables*, and recapitulates a good many points which have been already considered.

In taking leave of Dr. Cheever, and of the *Medical and Surgical Report of the Boston City Hospital*, we beg to be permitted to express the hope that the aim of any criticisms which we have offered will not be misunderstood. We have certainly no desire to detract from Dr. Cheever's reputation as a judicious surgeon and skilful operator; and that he merits both these titles we have no reason to doubt. When, however, he leaves his hospital wards, and assumes to instruct the profession in monographs and essays, as one entitled to speak *ex cathedrâ*, he fairly exposes his published teachings to criticism, and has no right to complain because an independent reviewer differs from him in his conclusions, or points out errors and omissions in his work; moreover, we may add, he need not expect either to disarm or to intimidate his critics by flaunting before their eyes the compliments which may have been bestowed upon his writings by the courtesy of foreign authors.

J. A., JR.

[1] One case not terminated.

ART. XXV.—*St. Thomas's Hospital Reports.* New Series, Vol. I. 8vo. pp. 706. London: John Churchill and Sons, 1870.

THE opening paper in this volume contains *A Short History of Old St. Thomas's Hospital*, written by W. H. STONE, F. R. C. P. From this we learn that in the year 1207 the canons of the Priory of St. Mary Overies erected a hospital in which to celebrate divine service, till their monastery, which had been destroyed by fire, could be rebuilt. A few years later, 1215, the said hospital was removed by Peter de Rupibus, or de la Roche, Bishop of Winchester, who endowed it with land to the amount of three hundred and forty-three pounds per annum. During the reign of Henry VIII. the hospital passed from under the control of the monks and into that of a board of governors. Successive sovereigns added to its revenues, which were also increased by donations and bequests from private individuals, but the hospital, though added to and improved from time to time, was not moved from the site chosen by the Bishop of Winchester until the recent purchase of the property by a railway company.

We shall direct attention first to the medical papers in the volume, the first of which is entitled—

Remarks on the Different Forms of Pulmonary Consumption, by THOMAS B. PEACOCK, M. D. The author begins this paper by expressing his dissent from the very commonly received opinion that "there are few diseases more simple in their character, more easy of detection, and of which the result can more readily be predicted, than pulmonary consumption," having found in his experience "that there are few diseases which differ more in their features, of which the diagnosis is sometimes more obscure, and the precise prognosis more open to doubt, than those which may be classed, and are generally understood to be embraced, under the general term of pulmonary consumption." This is an opinion which we are sure a majority of practical physicians share, but it is very rare indeed that we see it or hear it so frankly expressed. The term pulmonary consumption is applied to affections which, according to our author, present themselves under the following different circumstances:—

"1st. Where the disease of the lung is of constitutional origin, and may pursue its course without being necessarily materially modified by the presence of inflammation.

"2d. Where the disease, though originating in or closely connected with constitutional predisposition, is always greatly influenced in its symptoms, progress, and results by the existence of inflammation; and—

"3d. Where the disease commences in inflammatory action, but where, generally from impaired constitutional power, phthisical symptoms have subsequently become developed."

It will be seen from the above, that although recognizing the fact that phthisis can often be traced to inflammation of the lungs, Dr. Peacock is not prepared to adopt the views of those pathologists who hold that tuberculosis is a disease developed invariably from the absorption of caseous matter into the blood. It is somewhat noticeable, however, that of the three cases of acute tuberculosis reported by him in this paper, two are, to a certain extent at least, confirmatory of the correctness of the opinions held by Niemeyer and his school, for in the account of the autopsy of one of those it is stated that the bronchial glands did not contain tubercle, but were softened so as to form a dirty brown-coloured pulp; and in that of the other, at the apex of the right lung there were three or four small cavities about the size of split peas.

The points involved in the diagnosis and prognosis of this disease are discussed at considerable length, and we think with eminent ability. Dr. Peacock is not disposed to attach much value to the employment of Hutchinson's spirometer as an aid in the diagnosis of pulmonary disease, and says: "I have found that making the patient count aloud is for all practical purposes a more available means of estimating the breathing power. Thus, a person of average height, not too stout, and with healthy lungs, should count, without drawing a fresh breath, to from thirty to thirty-five; but the precise number will vary consider-

ably, much in the same way as the vital capacity varies in different persons, as estimated by Hutchinson's spirometer. In cases of disease, and even of early disease, the power of counting is very strikingly reduced, and this furnishes a ready means of detecting any defect in the breathing power, and of ascertaining approximately the extent to which it has gone." When speaking of the influence exercised by pleurisy upon the progress of phthisis, Dr. Peacock expresses the opinion that it is generally a serious complication, especially if both sides of the chest be involved, but that a serous effusion limited to one side may occasionally exercise a beneficial effect, and "may even by compressing the lung arrest the morbid process, so that, as the fluid becomes absorbed, the patient may temporarily recover with contraction of that side of the chest." Dr. Peacock, moreover, believes that imperfect aeration of the blood, giving rise to cyanosis, such as obtains in bronchitis and emphysema of the lungs, cannot be regarded as a condition opposed to the deposition of tubercle, and cites cases in confirmation of this view. A plate accompanies this paper.

On the Existence of Continued Currents in Fluids, and their Action in certain Natural Physical Processes, by GEORGE RAINEY, M. R. C. S. This paper is one of the most elaborate and interesting in the volume, and is evidently the result of much thought and labour; it does not, unfortunately, admit of condensation. By a series of experiments Mr. Rainey has succeeded in demonstrating that the particles of fluids, even under circumstances where they might be thought to be most at rest, are in constant motion, describing among themselves circular or elliptical currents. It is satisfactorily shown that these movements cannot be due to chemical action nor to the effects of temperature. The following explanation of the currents is adopted by the author as probable. Every fluid, no matter what its quantity or what form it may have been forced to assume, would have a tendency to assume a spherical figure if the force of attraction which acts upon particles of matter at apparent contact or at insensibly small distances were uninterfered with; but there is another kind of attraction, that of gravity, which is also, under ordinary circumstances, acting upon fluids, and the action of which is opposed to that of the former, inasmuch as one attraction draws the particles of any fluid mass towards its own centre, and the other draws the same particles towards the centre of the earth. In this way "the fluid particles will be brought into a condition of tension, or constrained and temporary stasis; the perfect balance of particles, as produced under the first hypothesis, that is, by the attraction acting at apparent contact, is replaced by one maintained under unstable conditions." But, to a much less extent than the attraction of the earth, the attraction of the celestial bodies is also believed to have some share in the production of these currents.

Mr. Rainey is convinced by the results of his experiments that, for the diffusion of fluids to take place, it is not necessary, as has been hitherto thought, to bring together fluids of different densities, although such a difference in density will undoubtedly promote this result. Molecular motion is also believed to furnish us another instance in which the existence of fluid currents may be adduced in explanation of a well-known physical process, and it is probable that the processes of exosmose and endosmose are to be explained in the same manner.

On the Mechanism of Articulate Speech, by J. S. BRISTOWE, M. D. The great attention which is now being paid to defects of speech in connection with various forms of cerebral disease, makes it specially important, Dr. Bristowe thinks, that the mechanism by which articulate utterance is effected should be well understood, particularly as comparatively few, even well educated men, have given much thought to the subject, or are capable of analyzing off-hand the compound words which they speak, far less, therefore, of using that power readily as a test of an aphasic patient's capability of speech, or for his education. He further thinks that a thorough comprehension of the mechanism of literal sounds would enable us very frequently to teach patients with aphasia, especially in those cases in which the mental powers are unimpaired, and there is preservation or restoration of the power of reading and writing, and control over all the voluntary movements of the organs which are used for speech. The tongue and lips in these cases can be used accurately as organs of touch

and as organs of mastication, and can be put into those various positions which respectively determine the several articulate sounds. It is clear that there is here not a loss of the memory of words, but a loss of the memory of how to say them; and it is simply ignorance on the part of the physician as well as of the patient of the mechanics of articulate speech which prevents patients with this degree of aphasia from being taught to speak. Dr. Bristowe's object in writing the paper is, first, to examine our own alphabet; second, to consider the construction of a complete alphabet, so far at least as to form a basis thereon; third, to discuss the mechanism of literal sounds and the mutual relations of letters. The paper does not admit of condensation, and we will simply say of it that all those interested in the subject of aphasia will find in it much matter for reflection.

Observations on the Diseases of the Skin which are generally supposed to be due to the Growth of Vegetable Parasites, by J. S. Bristowe, M.D. This, although a well-written paper, does not contain much that will be thought new by those of our readers who are interested in dermatology. The diseases considered are Tinea tonsurans, Tinea favosa, Tinea versicolor, and Tinea decalvans. The first three are thought to be dependent upon the presence of a vegetable fungus in the hair and epidermis; but inasmuch as in the last the presence of a parasitic growth has never been demonstrated, the author holds that it is due to some modification of nutrition and growth which renders the hairs brittle and peculiar in structure, a change which is followed by their loss. Dr. Bristowe believes that the parasitic growth invades the epidermis equally with the hair, and "doubts if the root or root-sheaths of the hair are to be regarded as being in any special way liable to the invasion of the fungus, excepting in so far as they constitute collectively a comparatively large accumulation of epidermic structures." Entertaining these views, it is not surprising that he does not regard epilation as so necessary a part of the treatment as the majority of dermatologists consider it. This paper is illustrated by four plates.

Infantile Paralysis, by Richard Barwell, F.R.C.S. There are very strong reasons, Mr. Barwell thinks, for believing that this form of paralysis is independent of any central lesion of the nervous system, and for attributing it to some alteration of the nerves of the part affected just at the point of distribution to the muscles. If a nerve be divided in the upper part of its trunk, the muscles supplied by it very soon lose their sensibility to the induced current, and acquire an abnormal sensibility to the galvanic current; but after a time the muscles, which were at first flaccid, become rigid, and the rigidity is not lost until the nerve has reunited. If we cut the nerve a little lower down there will be less stiffness, and scarcely any if we divide it at the point where it enters the muscles, while the loss of irritability to the induced current is more rapid.

Now the loss of sensibility to the induced current, the abnormal sensibility to the galvanic, together with a flaccid condition of the muscles of the paralyzed part and a loss of reflex contractility, are prominent characteristics of infantile paralysis, and occur in no paralysis having a central origin. Much importance is attached to the fact that the sensibility of the muscles to the continuous current is preserved, and it is believed to furnish an important indication in the treatment of the disease. No time should be lost; but after the lapse of twenty-four or forty-eight hours, which may be occupied with attention to the secretions, the continuous current should be applied to all the muscles which do not respond to the induced current. It does not appear to be a matter of much importance which way the current runs, so that muscular movement is produced. At the same time hypodermic injections of strychnia are to be given. Mr. Barwell says that the injection under the skin of any drug must be intended for one of two purposes, for the production either of a general effect or of a local effect. If our object be the former, we should use a weak solution; if the latter, a strong one. Mr. Barwell has succeeded in obtaining a solution of one grain of strychnia in fifty of fluid,[1] and has used of

[1] "The strongest solution is this: Strychnia gr. ij; acid. hydrochl. ♏v; spirit. rect. ♏xv; aq. ♏lxx."

this solution in children, and in fact babies, five and even seven and a half minims; that is to say, one-twentieth or one-fourteenth of a grain; and if it were necessary to give a larger quantity of strychnia, he should not hesitate to use it in a still more concentrated form, but thinks that the doses given above should not often be exceeded.

In regard to the nature of the change in the nerve-fibrillæ, Mr. Barwell has of course little to say. He does not believe that any organic change is to be found at the outset, although such change may arise in the further progress of the case. "On the contrary, the attack is at the outset so rapid and complete that there has been scarcely time for degeneration; its essence lies probably in some subtle derangement in relationship between the ultimate muscular and terminal nerve fibres, perhaps from some inflammatory, perhaps merely from some chemical or nutrient change."

There is an admirable description of the disease given, and the points involved in the differential diagnosis between it and paralysis dependent upon spinal lesions are discussed with great clearness and at considerable length.

On the Action of Quinia, by EDWARD CLAPTON, M. D. The author's object in writing this paper is to give the results of his experience amongst the out-patients of St. Thomas's Hospital, in prescribing large doses of quinia for the purpose of arresting epileptic seizures. A rather meagre report of its action is given in seventy cases, in most of which it seems to have had a marked effect in diminishing the number of the paroxysms. In a few, however, its administration appears to have been followed by an aggravation of the disease. "It has no power," the author says, "of preventing the seizures when they arise from the effects of syphilitic diseases or of injuries to the head, and it generally fails in highly hysterical young women; but in other cases in which the periodic epileptic seizures depend on blood disease solely (as is doubtless the case in the majority of instances), and in which the fit is preceded by a distinct aura or warning, it is almost certain to succeed."

"It is not easy to determine what the altered condition of the blood is in those who are epileptic; nor the pathological state of the nerve-centres, for no lesion and frequently no morbid appearance whatever is found after death. From the way in which quinia acts in these cases, the altered condition is, in my opinion, dependent on some chemical change, in all probability the gradual abstraction of animal quinoidine and its substitution by some special morbid matter, which has as gradually formed, and which periodically, when sufficiently accumulated, exerts its own specific influence on the brain or spine (as the case may be) in an impulsive manner, thus imparting its own peculiar character to the convulsive attack, whether epilepsy, tetanus, hydrophobia, or the like. It is possible, therefore, in such cases to prevent these sudden and tumultuous symptoms by rapidly cinchonizing the patient." The dose of quinia necessary to prevent the occurrence of a paroxysm is about that usually given in intermittent fever, and it should all of it be given during the warning, if this is sufficiently long.

Dr. Clapton believes that quinia will be found not less efficacious in tetanus and hydrophobia than in epilepsy. In looking over the notes of the seventy cases reported, the success has not appeared to be greater than would have been obtained if the bromide of potassium had been the drug administered, which certainly cannot be supposed to replace the animal quinoidine—a fact which, so far as it is worth anything, seems opposed to the acceptance of the author's explanation of the action of quinia in this disease.

Partial Spinal Paralysis with Locomotor Ataxy, by SAMUEL SOLLY, F.R.S., and J. LOCKHART CLARKE, M. D., F.R.S. This paper is the joint production of Mr. Solly and Dr. Clarke, the former furnishing the clinical history of the case, and the latter the result of the microscopical examination of the spinal cord. Dr. Clarke believes that ordinary spinal paralysis is often associated with locomotor ataxia, and that cases which we often consider as examples of one or the other of these maladies are, in reality, mixed cases.

Case of Aneurism of the Arch of the Aorta, opening into the Trachea; Tracheotomy, by T. S. BARKER, M. D. In this case the existence of an aneurism, though never positively diagnosticated, was suspected, in consequence of the

occurrence of paroxysmal attacks of dyspnœa, which appear to have been of unusual severity. The autopsy showed that the trachea had been much compressed by the aneurism, and that the left recurrent nerve had also been pressed upon, being involved in the tumour.

Some Experiments relating to the Forms assumed by Uric Acid, by W. M. Ord, M. B. Lond. This paper, as the title indicates, contains the results of experiments instituted for the purpose of determining whether the crystalline forms assumed by uric acid in the urine have a definite relation to the composition of that fluid. Solutions of uric acid were treated with different substances, such as egg-albumen, solution of gum-arabic, solution of brown cane-sugar, solution of starch, and hydrochloric acid was then added in excess, so as to cause the precipitation of the uric acid, which was thrown down in a different form in each experiment.

Fibrous Tumour of the Uterus and Pregnancy; a Narrative of two Cases, by Leonard W. Sedgwick, M. D. In the two cases reported by Dr. Sedgwick, fibrous tumours of the uterus, which in one case could be distinctly felt during pregnancy, and in the other after the completion of labour, disappeared during the involution of the uterus, and the subsequent changes which the organ undergoes after pregnancy. The cases are well reported, and will be found of interest.

Cases illustrating the Clinical History and Pathology of Effusions of Blood into the Peritoneum, with special reference to the so-called Retro-Uterine Hæmatocele, by Robert Barnes, M. D. Although it is some time since Bernutz, Nélaton, and other French pathologists first directed attention to the collection of blood in the pelvis, the importance of the subject, Dr. Barnes thinks, has not been fully recognized. This may be explained by the fact that few physicians are possessed of sufficient skill in diagnosis to distinguish between collection of blood in the retro-uterine space, and a retroverted gravid uterus. No difficulty can, however, possibly present itself, if the examination be properly made with all the aids which we at present possess for the recognition of morbid conditions of the uterus. In cases in which retro-uterine hæmatocele is suspected, the sound should be used. The instrument, slightly curved, is to be introduced into the cervix uteri, and the point being turned towards the umbilicus, will proceed until it is arrested by the fundus of the organ. In this way the length of the uterus is ascertained, and by carrying the handle of the instrument backward, the fundus may be made to project over the symphysis, so as to allow the outline of the organ to be distinctly traced.

Fifty-three cases are reported. The causes of the hemorrhage in these cases were:—

1. Rupture of the uterus.
2. Rupture of extra-uterine fœtation cysts.
3. Rupture of diseased ovaries.
4. Injury.
5. Effusion of blood into peritoneum attending abortion.
6. Menstrual disturbance or difficulty, leading to effusions of blood into the peritoneum.

The group of cases included under the last head may be subdivided as follows:—

1. Cases of probable very early Fallopian gestation, and escape of ovum into peritoneum.
2. Cases in which there existed a mechanical impediment to the natural escape of the menstrual blood.
3. Cases in which there was disturbance or interruption of the menstrual flow from—
   a. Cold and over-exertion.
   b. From emotion.
4. Cases in which the immediate cause was obscure, the history in some being imperfect.
5. Cases in which the hemorrhagic character of the blood was increased by disease.

It is probable, Dr. Barnes says, that in this group of cases the blood flows back from the uterus during menstruation, through the Fallopian tubes, into the

peritoneal cavity. An opinion which is sustained by the fact that there is always an increase in the amount of blood after each menstrual epoch. He recommends perfect rest, and counsels us against operative interference, except, of course, in cases of rupture of the uterus, in which an operation is urgently indicated. This paper contains several wood-cuts.

The Causation of Epidemic Disease, by ALFRED CARPENTER, M. D. Dr. Carpenter holds that all diseases have their origin in defective sanitary arrangements, and publishes in his paper several observations which show that typhoid fever may arise spontaneously from filthy matter at an early stage of putrefaction being allowed to poison the air or water, or both.

"The remedy," he says, "appears to be the rapid removal of *débris*, the rapid oxidation of the typhoid cacozyme, wherever produced, by a free and constant ventilation of every sewer, so that no stagnant air can possibly be present to become loaded with products of incipient putrefaction, which products carry with them the cacozyme, the propagator of disease."

The Medical Report and the Report of the Obstetrical Department will also be found to contain much interesting matter, principally in the form of tables.

We have thus passed in rapid review the various medical papers in this volume. Some of them may be thought scarcely practical enough for a volume of hospital reports, but of this our readers can, from the analysis given, judge for themselves. The manner in which the book is issued reflects credit alike upon the editors and publishers. J. H. H.

Turning our attention now to those papers which may seem of special interest to such of our readers as engage in the practice of surgery, we shall consider in the first place—

A Clinical Lecture on Retention of Urine in Women, by ROBERT BARNES, M.D. The author begins his paper with the just remark that patients seldom trouble themselves about the pathological condition to which their symptoms may be due, but about the symptoms themselves from which they seek relief. Hence the practical value of the plan which he adopts in the present communication, of taking a particular symptom and tracing out by clinical records the various causes from which it may arise. The female urethra is short and of considerable calibre, so that it is rarely the seat of stricture, and hence retention of urine in women is commonly due not to disease of the urethra itself, but to its compression by some external body which flattens it against the pubic symphysis, or stretches and twists it so as to produce valvular or angular closures. Having described the mode of determining the existence of retention of urine, which in women as in men is often marked by incontinence or overflow, Dr. Barnes considers successively the various conditions to which the retention may be due, illustrating his remarks with numerous clinical histories. The limited space at our command will allow merely a simple enumeration of the causes of urinary retention, as set forth by the author, and we must refer our readers to the original paper for further information on the subject. These causes are: 1. Displacement of the uterus, as retroflexion, anteflexion, or prolapsus; 2. Occlusion of the urethra by the impaction of a calculus; 3. Fibroid tumours of the uterus; 4. Distension of the uterus by accumulated menstrual secretion; 5. Distension of the rectum by impacted fæces; 6. Retro-uterine hæmatocele; 7. Pressure of the child's head during labour, or exhaustion or perverted nerve-action during the same process; 8. The puerperal state, during which retention may arise from vesical paralysis, from swelling of the urethra, from peritoneal inflammation, from reflex irritation (as from clots in the uterus), from insufficient contraction of the uterus, or from the formation of a vaginal hæmatocele or thrombus; and 9. Hysteria, puerperal insanity, typhoid and typhus fevers, etc.

With regard to the condition ordinarily called uræmia, which may result from retention of urine, Dr. Barnes declares his belief that the poisonous element "is not urea as such, or carbonate of ammonia, the result of the decomposition of urea in the blood," and that "it is not one of the elements of the urine, which the chemist can identify, but that the urine as a whole must be considered."

Hence, instead of the term *uræmia*, the author much prefers the wider term *urinæmia*, which he believes to be the most common cause of death in cases of retroversion of the gravid womb.

On Wounds of the Heart, by JAMES F. WEST, F.R.C.S., etc. This is an interesting and valuable communication, founded on a study of thirty-four cases (references to which are appended in a table) chiefly recorded by British surgeons, and two of which came under the author's own observation. The elaborate statistics of G. Fischer, published in *Langenbeck's Archives* for 1868, are also referred to in a note. Mr. West considers in succession the pathology, symptoms, diagnosis, prognosis, and treatment of wounds of the heart, and illustrates his remarks by the quotation of clinical records. The following are given as the indications for treatment: "1. To favour the formation of a coagulum in the wound. 2. To prevent the separation of it when formed. 3. To moderate the force of the circulation, and to prevent the mischief which would occur from severe pericardial and endocardial inflammation." To meet the first indication, Mr. West advises the injunction of the strictest silence and rest, the retention of the patient in the recumbent posture, the exposure of the chest to the air, and, if there be much tendency to hemorrhage, the application of cold to the præcordial region. "The wound should be closed at once, and should not be opened unless the collection of blood in the pericardium becomes so vast as to cause intense dyspnœa and to interfere materially with the action of the heart. . . . Foreign bodies should be removed, if the removal can be effected without difficulty; but no violence should be used in attempting to withdraw them, lest a fatal hemorrhage should ensue. They may become encysted." To meet the second indication, the patient must be kept at rest and quiet, free from all irritation and excitement, and in the recumbent posture. Only the lightest and most digestible food should be taken, and in small quantities at a time. The following remarks with regard to the abstraction of blood in these cases seem to us eminently judicious: "It was formerly the practice," says Mr. West, "to bleed the patient from the arm until he was in a state of syncope, and to repeat the venesection as often as the pulse began to rise and reaction to set in. Experience shows that this extreme lowering of the amount of vital fluid does not effect the purpose aimed at, the heart becoming more irritable under the repeated abstraction of blood, and the process of repair hindered at the same time. Recourse may be had to leeches, occasionally, with advantage, but rarely can venesection, to the extent it was formerly carried, be justifiable." The author advises the employment of digitalis and acetate of lead, with the use of morphia by hypodermic injection. Should fluid accumulation in the pericardial cavity render paracentesis necessary, only a small quantity "should be withdrawn at a time, as less risk of disturbing the clot will arise from repeating the process than from suddenly drawing off a large quantity of the fluid which has been surrounding and compressing the heart." To combat the pericarditis and endocarditis which ensue in the later stages of the case (the third indication), Mr. West advises occasional leeching, the moderate use of calomel and opium or of mercurial inunction, with rest and a rather low diet. Iodide of potassium and the local application of iodine may be employed at a later period. The support afforded by a broad flannel bandage is also desirable in all cases.

Mr. West's paper is one which will always be classical in the literature of heart lesions.

On Lumbar Colotomy, with Remarks, by WILLIAM ALLINGHAM, F. R. C. S. This, too, is a paper of much interest and practical value. Mr. Allingham is well qualified to speak of the operation of lumbar colotomy, having himself resorted to it on eleven occasions. The following are given by the author as the various indications for the operation:—

"I. To relieve the distended bowel when an otherwise insurmountable obstruction exists in the rectum and sigmoid flexure.

"II. To remove or mitigate very intense pain, caused by the passage of fecal matter over a cancerous surface.

"Or when feces pass through a perforation in the gut into the male bladder.

"Or when motions pass into the vagina, causing, in addition to great pain and mental distress, an almost perpetual incontinence of feces.

"III. To relieve, and perhaps cure, an otherwise incurable case of stricture and ulceration of the rectum."

The difficulties of the operation, which, if the gut be distended and the patient thin, are very slight, are, under opposite circumstances, materially increased. Failure to find the colon has, however, usually resulted from the incision being made too far from the spine, the peritoneum being consequently opened, when a coil of small intestine presents itself, and impedes the remaining steps of the operation. From more than fifty dissections made by the author, he has come to the conclusion that the descending colon is normally situated "half an inch posterior to the centre of the crest of the ilium (the centre being the point midway between the anterior superior and posterior superior spinous processes)," and hence he advises that, before operating, this spot should be marked on the crest of the ilium "either by a piece of adhesive plaster or a touch of strong iodine paint."

Mr. Allingham gives full and precise directions as to the mode of performing the operation, and then proceeds to a narration of his cases—ten in number, the eleventh having occurred so recently that its result cannot as yet be definitively stated. In six of the ten terminated cases the operation was for malignant disease of the rectum, the immediate result being unfavourable in but one; the patient in this case, a man aged sixty-four years, dying on the twelfth day from erysipelas. The other five patients were all decidedly benefited by the operation, though, by the progress of the disease, death ultimately ensued, after intervals varying from eight weeks to four and a half years. Of the four patients operated on for stricture and ulceration (non-malignant), two are still alive and in good health, after intervals of three and four years; the two others, though temporarily benefited, dying, one after nine weeks from exhaustion, and the other after nine months from pulmonary phthisis. These results must certainly be considered as very satisfactory, and their publication will, we trust, aid in dispelling the prejudice which, it is to be feared, still prevents the general recognition of lumbar colotomy, as not only a legitimate operation, but as one which, in suitable cases, should be strenuously urged by the surgeon.

On Operations for the Cure of Vaginal Fistulæ, by T. SPENCER WELLS, F.R.C.S., &c. The name of the author is sufficient assurance of the excellence and value of this paper. It is didactic rather than clinical, and gives in a clear and forcible manner the writer's opinions as to the best method of treating vesico-vaginal, recto-vaginal, and vesico-utero-vaginal fistulæ. Beginning with a brief description of the anatomy of the vesico-vaginal septum, Mr. Wells points out that the ureters, one or both, are often involved in fistulæ of this part, and that occlusion of these tubes in an operation for the closure of the fistula may, and occasionally has resulted in the production of fatal uræmia. The best mode of *paring the edge* of the fistula is still a matter of dispute. In 1861, Mr. Wells "insisted upon the importance of not cutting away any of the mucous membrane of the bladder" in this part of the operation, and taught that the edges should be bevelled obliquely, so as to afford broad surfaces for adhesion; the stitches being passed "close to, but not through the vesical mucous membrane." Simon, on the other hand, deprecates bevelling, recommends that the edges should be pared in a direction almost perpendicular to the plane of the septum, and advises the employment of two sets of sutures—one passing deeply through the vesical mucous membrane, and a second or superficial set, interposed between the others, and embracing only the mucous membrane of the vagina. Langenbeck's and Collis's plan of splitting the edges of the fistula, so as to get a broad surface for adhesion without removing any tissue, "may be adopted occasionally when the edges of the fistula are not hardened; but they are often in so altered and unhealthy a condition that it is better to cut them away." With regard to the material of which the suture consists, "I soon learned," Mr. Wells says, "that the various clamps, buttons, and bars which had been devised by Sims, Bozeman, Simpson, and myself, were of no use, and often did harm; and I began to doubt whether metal had much if any superiority over silk." Simon and others have entirely

discarded the metallic suture; Ulrich, of Vienna, uses "a fine, smooth hempen suture or twine;" while Simon himself prefers "a fine, well-twisted, and well-waxed silk, as stout as strong horsehair." Neugebauer, of Warsaw, on the other hand, has, after many comparative trials, returned to the general use of silver wire; while the iron wire is preferred by Wagner, of Königsberg. "My own mind," Mr. Wells adds, "is not yet fully made up; but my present feeling is that it matters very little whether smooth, well-waxed silk or twine or silver or iron wire is used; success depending far more upon the regular and complete removal of the edges of the fistula, and the accurate adaptation, without tension, of raw surfaces freed from cicatricial tissue, than upon the material used for the suture." To *expose the fistula*, Mr. Wells places the patient in the lithotomy position, on a table fitted with a padded double-inclined plane, and employs a modification of Emmet's speculum, so arranged that the fenestrated blade can be fastened upon the back instead of the hip, as in the original instrument. If there be no special contraindication, *anæsthesia* should be induced in resorting to the operation for vesico-vaginal fistula; the bichloride of methylene being preferred by the author as "quite as effectual and much safer than chloroform, while it is less often followed by vomiting, and headache, and depression." To *secure a good light*, if bright daylight cannot be obtained, Mr. Wells employs a *reflector* which may be used with either natural or artificial light. The edges of the fistula are most conveniently fixed with one or more hooks, and pared by transfixing with a double-edged knife, the blade of which is bent at an angle of 45° about an inch from its point. Hemorrhage should be checked by torsion, by injections of iced water, or by pressure with dry sponge or cotton wool. The sutures may be introduced by small curved needles held with forceps, or by a needle such as is used in cases of nævus. A short needle may be threaded on each end of the suture, and passed from the vesical outwards to the vaginal border of the fistula; or an armed eyed needle may be passed through one edge, and a notched needle through the other; the silk or wire being then caught in the notch and drawn through. When one needle only is used, "a short blunt hook, or one where the short end is bent at a right angle," may be used to fix the second pared edge, and thus facilitate the passage of the needle. "When wire is used, it should be drawn over the end of a small forked stem, in order to avoid the danger of cutting the tissues between the point of exit of the needle and the edge of the fistula—an accident by no means rare if this precaution is not taken." The sutures should be passed about a quarter of an inch from the pared edge of the fistula; and the number of sutures—if but one row of equal depth be used—should be not less than six to the inch. The sutures, if of silk, are to be tied in an ordinary knot on one side of the line of union; and if of wire, are to be simply twisted, the ends being brought together in a bundle, a full inch from the united edges. "If wire be used, the vagina is protected from any irritation by passing a short piece of India-rubber tube over the end of the bundle of wires, or a small ball of wax may be pressed on to the ends of each separate suture." The accuracy with which closure has been effected should be tested while the patient is still on the table, by injecting a few ounces of water (or milk, as preferred by Simpson) into the bladder, and by passing a fine probe between each of the stitches. "If a probe passes into the bladder at any point, or if the water escapes from the bladder, one or more additional stitches should be introduced." With regard to the use of the *catheter* during the after-treatment, Mr. Wells says: "My present practice is to introduce a small vulcanite catheter, curved like that of Sims's, immediately after the operation; and to leave it as long as the patient does not complain of it, and no irritation of the bladder is set up; but on either of these signs being observed, the catheter is at once removed, and is either used every two or three hours, or not at all if the patient can empty the bladder without effort." When all goes well, no examination should be made for six or seven days, when the sutures, if of silk, may be removed; wire ones may be allowed to remain eight or ten days, or even longer. In the event of failure, "if the ununited edges of the opening, when cleared of urinary deposit, appear to be covered by healthy granulations, the sutures may be at once reapplied, or the granulating surfaces may be held together with *serre-fines*."

In cases of *vesico-utero-vaginal fistula* it may occasionally be necessary to unite the posterior lip of the cervix uteri to the neck of the bladder, sterility, of course, resulting, and the menstrual fluid being subsequently evacuated with the urine. Mr. Wells has done this successfully upon three occasions, and believes that the supposed risk of urine entering the peritoneal cavity through the Fallopian tubes is purely imaginary. In many cases, however, the anterior lip only of the cervix uteri may be used to close the fistula, leaving the cervical canal free.

Where the destruction of parts has been very extensive, Simon's operation of *transverse obliteration of the vagina* may be the only available resource.

We have devoted a good deal of space to Mr. Wells's paper, in the belief that an exposition of his views upon the important subject of vaginal fistula would be of interest to our readers; and we will now terminate our analysis by quoting his remarks as to the *paths for future improvement*. These lead—"*first*, to more exact experiments on the relative value of the different materials used for sutures; *secondly*, to the real value of the catheter in the after-treatment; and, *thirdly*, to the attempt to cure vaginal fistulæ without either cutting-instruments or sutures. If the edges of a fistula are destroyed by the actual cautery or by caustics, and the granulating surfaces are pressed together by *serre-fines*, I have proved that union may be obtained. . . . . My experience of union of ruptured perineum after the use of nitric acid and the application of the quilled suture and the ordinary suture, convince me that when there is much fear of bleeding, or any other objection to the use of cutting-instruments, the principle of obtaining granulating surfaces by the use of the cautery or caustics, and retaining these surfaces in apposition either by suture or some form of *serre-fines*, may be carried out in practice with very encouraging results." Mr. Wells's paper is illustrated with numerous well-executed woodcuts.

Cursory Observations on Lithotomy, by THOMAS CARR JACKSON, F.R.C.S. This paper does not contain anything new, nor does it strike us as being very interesting or very valuable. Mr. Jackson advocates free section of the prostate, and declaims against the use of the sharp-pointed knife in making the deep incisions, asserting that those who use it endanger the safety of their patients for the sake of "brilliancy." But we do not know that Mr. Jackson's opinion upon these points is of any greater authority than the opinions of Fergusson, Erichsen, Thompson, Gross, and others, who advise a limited section of the prostate, and who use the sharp-pointed knife, which indeed, in our limited experience, we have ourselves employed (though making no profession of "brilliancy"), and which we can scarcely conceive to be productive of mischief in the hands of any one who is fit to operate at all.

Contribution towards the Surgical Treatment of Diseases of the Joints, by SYDNEY JONES, F.R.C.S., M.B., etc. This paper gives details of five cases (all successful) of excision of the knee-joint. With regard to the indications and contraindications of the operation, Mr. Jones believes that it is not adapted to "those so-called strumous cases, occurring in children especially, where not only the soft structures, synovial membranees pecially, are diseased, but where, without any special necrosis indicated by sinus, by long continuance of disease, or by pain locally persistent, the whole articular extremities have become enlarged by so-called strumous osteitis, and so changed that any repair of their cut surfaces can hardly be expected to occur. . . . The vitality of the bone seems so low that damage is more liable to be induced than a tendency to repair. In such cases, on resecting, one finds the cancellous structure very loose, easily indented and broken down, comparatively non-vascular, and more or less loaded with fat. . . . . The appearance of the resected surfaces in the so-called strumous cases above noticed is very different from that found in the cases to be referred to, and which seem to be more especially adapted for excision. In these typical cases the same surfaces are dense; the cancellous tissue is firm, not capable of indentation; and bleeding takes place from the cut surfaces of bone."

The splint which was used in the cases reported, and which, Mr. Jones says, is commonly employed at St. Thomas's Hospital, appears to resemble in all

essential points that devised by the late Mr. Price. The author lays stress upon the importance of not removing the splint for six weeks after the operation. This paper is adorned with a handsome lithographic plate.

Delirium Tremens in Surgical Cases, by J. Croft, F.R.C.S. This is an interesting paper founded on a study of thirty-one cases, all but four of which recovered. The factors which combine to produce delirium tremens in the class of patients which comes under the care of the hospital surgeon are, according to the author, "1st, a peculiar impairment of the normal chemical and functional condition of the essential elements of the nervous structures; 2d, deprivation or stinting of stimulants; 3d, shock and its reaction." The change which ensues in the nervous structures in consequence of the deprivation of alcohol, must be the first of an upward series towards the normal condition. The effect of alcohol on the nerve-tissues being to retard their metamorphosis (which is assumed to be of the nature of oxidation), there must be, in persons who render themselves liable to delirium tremens, an accumulation of imperfectly oxidized and depraved elements in the nerve-tissues. During the reaction from previous habits and shock, quickened oxidation takes place, entailing accelerated circulation, and consequently involving a state of unrest. Upon the subsidence of this increased activity of change, the circulation becomes slower, repose ensues, and the repair which that state implies. "The nature of the disease," Mr. Croft adds, "is such that the disorder spontaneously tends to a favourable termination in restorative sleep. If I am right, then, the principle a surgeon should have in view, in treating this malady, is the promotion of the oxidation of the nervous tissues, and, at the right time, the induction of the much to be desired sleep." In the early stage of the disease, opium, "whether in small or large doses, is not adapted by its mode of action to have a curative influence. . . . . When the affection arrives at a certain period, ranging from the third to the seventh day, then is the time to employ a soporific with advantage."

On the Temperature of Shock in Surgical Cases, by W. W. Wagstaffe, F. R. C. S., etc. Mr. Wagstaffe, it appears to us, errs in regarding shock as *caused* by concussion of the brain, hemorrhage, etc. A patient may, as the result of injury, suffer at the same time from shock,[1] *plus* loss of blood, *plus* cerebral concussion, *plus* mental emotion, etc. etc.; but these several conditions are in no degree necessarily connected, nor dependent one on another. This is, however, a question chiefly of theoretical interest, for a case of uncomplicated shock is seldom met with in practice. Mr. Wagstaffe has noted the temperature in over 80 cases of injury of various kinds, and finds that a marked difference exists in the depression in temperature observed during collapse in fatal and non-fatal cases. Taking the temperature of the body as 98°.4, the cases recorded show in—

		NOT FATAL. A mean fall of	FATAL. A mean fall of
A.	Burns and scalds	0.1°	3.5°
	Severe fractures	1.6	2.1
	Operations (without undue hemorrhage)	0.3	nearly 3.0
B.	Concussion of brain	1.2	6.1
	Injury to spinal cord	—	5.6
C.	Visceral injury (extravasation into peritoneum)	3.3	3.8
D.	Hemorrhage	—	2.2

The lowest temperature recorded by the author was in a fatal case of fractured spine, in which the temperature fell 16.65° in forty-eight hours. The lowest temperature in a case which recovered was in a patient with cut-throat, where the temperature on admission was 91.2°, or 7.2° below the normal standard. From a table given at the end of the paper, we find that of 47 cases in

[1] The best definition of shock with which we are acquainted is that given by Longmore, who calls it the "sympathy of the whole frame with the part subjected to serious injury, expressed through the nervous system." (*Holmes's Syst. of Surgery*, 2d ed., vol. ii. p. 136.)

which the fall of the temperature was less than 2°, 40 recovered, and only 7 died; while of 34 cases in which the fall was more than 2°, only 9 recovered, and 25 died. Thermometrical observation, it is thus seen, may be a valuable means of forming a prognosis in cases of surgical injury.

Cases Illustrative of Shock and Visceral Lesions, by FREDERICK CHURCHILL, *with Remarks* by F. LE GROS CLARK. These cases are published as constituting an appendix to Mr. Clark's *Lectures on the Principles of Surgical Diagnosis*, etc., which it was our pleasant task to review in the number of this Journal for July, 1870 (p. 231). Twelve interesting cases are narrated in the present paper, and commented upon in a most judicious and instructive manner.

Amputation Statistics, 1862–1869, by FREDERICK CHURCHILL, M. B. The following are the results of amputations of limbs at St. Thomas's Hospital for the eight years during which it has occupied its temporary quarters at the Surrey Gardens:—

Thigh	44 cases,	18 deaths,	or 40.91	per cent.
Leg	26 "	10 "	38.46	"
Arm	11 "	4 "	36.36	"
Forearm	17 "	2 "	10.53	"

The death-rate, according to the circumstances under which the amputation was performed, was—

For primary amputations	1 death in 4.1 cases.
" secondary "	1 " 2 "
" amputations for disease	1 " 5.5 "

Report of the Obstetrical Department of St. Thomas's Hospital, by HENRY GERVIS, M. D. Lond., etc. From this report, which is chiefly statistical, we learn that from December 30, 1868, to December 7, 1869, 1291 cases of midwifery were attended by the students of the hospital; 1280 labours resulted in single births and 11 in twin births, the whole number of children born being 1302. Of these, 1248 (654 boys and 594 girls) were born alive, and 54 (34 boys and 20 girls) were stillborn. Of the 1291 mothers, 169 were primiparæ, and 1 was eminently a multipara, the labour here noted being her sixteenth. Of the 1302 births, 1271 were instances of vertex presentation. There were but 7 maternal deaths, 4 from puerperal fever, 1 from peritonitis, 1 from *post-partum* convulsions, and 1 from ruptured uterus. Of the labours, 1220 were natural, 39 were difficult, and 32 were complicated. No less than 520 vaccinations were performed during the year.

Medical and Surgical Statistical Tables. These tables occupy over 180 pages, and constitute, in our judgment, by no means the least valuable portion of the volume. The statistics are for the years 1866, 1867, 1868, and 1869, following thus without interruption on the *Report of Patients treated in St. Thomas's Hospital, from* 1861–1865, of which we furnished a bibliographical notice to the pages of this Journal, in the number for July, 1869 (p. 225).

The volume concludes with a list of the officers of the hospital, of the students who have taken prizes, etc.

Thirty-five years have elapsed since the appearance of what we suppose must now be called the "old series" of *St. Thomas's Hospital Reports*, a series which expired prematurely with its first volume. In the same year (1836) appeared the first volume of *Guy's Hospital Reports*, which has already reached its 30th volume, and constitutes a surgical repertory of the very highest value. Whence the difference? The great secret, it seems to us, of the success of the Guy's reports, is that *all* the officers of that hospital, seniors and juniors, take an active interest in the reports, and not only constantly contribute to their pages, but put *hard work* into their contributions. We observe, with regret, that the surgeons of St. Thomas's do differently. Surely, since 1836, there must have accumulated sufficient material of interest, for every one connected with the hospital to be able to contribute something towards establishing the "new series" of reports on a firmer basis than the old; and yet, of the three surgeons of the hospital, but one has anything to say, and he confines himself to a few desultory remarks upon twelve cases recorded by the Surgical Regis-

trar. We close the volume with a feeling of disappointment; excellent as it is—and our comments in the preceding pages show how excellent we deem it—we cannot help feeling that it does not inaugurate a new enterprise in a manner which promises ultimate success. We sincerely trust that the medical and surgical staff of St. Thomas's Hospital will not suffer their "new series" to be added to the melancholy list which already contains the "old series" of the reports, together with those of the London Hospital, and, alas, some others published nearer home. J. A., Jr.

ART. XXVI.—*Insanity and its Treatment; Lectures on the Treatment, Medical and Legal, of Insane Patients.* By G. FIELDING BLANDFORD, M. D. Oxon., F. R. C. P. Lond., Lecturer on Psychological Medicine at the School of St. George's Hospital, London, etc. With a Summary of the Laws in force in the United States on the Confinement of the Insane. By ISAAC RAY, M. D. 8vo. pp. 472. Philadelphia: Henry C. Lea, 1871.

THIS book supplies a want in the medical literature of our time, created, no doubt, by the peculiar relation of the profession to the subject of which it treats. Since the establishment of hospitals for the insane, no disease of equal frequency and equal gravity has been so imperfectly studied by the general practitioner as insanity. And, therefore, when some occasion obliges him to resort to books in this department of his art, he is unable to find precisely the information he needs, not being familiar enough with the subject to avail himself readily of the help they would otherwise afford. In the ponderous treatise of Bucknill and Tuke he finds a mountainous mass of learning, very correct and thorough, no doubt, that appalls rather than helps; while the work of that accomplished scholar and sagacious observer, Dr. Pritchard, however calculated to instruct and to please the intelligent reader, will do but indifferent service in the exigencies of every-day practice. Even the work of Dr. Maudsley is more likely to excite the admiration of the student for its indications of remarkable ability and culture, than to reward his search for help in an actual emergency. Books like those fail to place him in that relation to the disease which renders him equal to the situation, and complete master of his resources. They do not enable him to recognize clearly in his patient any of the phases of mental disease which they so elaborately describe, and place him at once on the proper course to be pursued. What he needs is to be able, by the light of some graphic touches, to see the disease in actual operation, as it were, as displayed in the men and women of ordinary life, to catch its essential aspects, and to discriminate and generalize as he would in disorders of the stomach or lungs.

Dr. Blandford's book well meets the prevailing deficiency, and is one of that class, unhappily too small, which prove a real blessing to the busy practitioner who has no other time for reading but those odd moments which he can catch in his brief intervals of leisure. He gives us the fruit of his own observations, in a plain, familiar way, with just enough of method and elaboration to make his instruction intelligible. He lays no claim to originality, but he can claim the merit, no less rare, perhaps, of recognizing the value of other men's ideas. He presents his subject as it appears to an intelligent and acute observer, who has enjoyed some facilities for study, and is well informed respecting the labours of others; who is never deceived by the moonshine that generally plays over the surface of the favourite notions of the day, but regards every point in the light of a strong and healthy common sense. He shows no turn for metaphysical discussion, and eschews the refinements of modern physiology, but he is thoroughly familiar with the various aspects of disease, and his teaching is singularly clear and reliable. Unlike that too numerous description of writers who can never fully appreciate a truth till twenty years after it has been admitted by almost everybody else, he is able and willing to understand the merits of a doctrine, notwithstanding it may be new and much spoken against. It is a great thing to be reasonably sure that the book to which one resorts for in-

struction is a fair and honest representation of the subject, unbiased by prejudice or pride of opinion. With such books the reader is safe, as he certainly is not with many of our time, where the writer is more anxious to suppress or decry what is distasteful to himself, than to render a truthful account of what has been done by others.

Dr. Blandford's book is so free from defects, and is so fair a representation of the most approved views respecting insanity, that we find in it small occasion for criticism, and can do little more than commend it as an admirable manual for practical use. His doctrine of the causes of insanity is founded on good sense and sound philosophy, which cannot be said of most of the teaching on this subject. It is wonderful how long men have continued, in defiance of all logic and pathology, to look for the causes of insanity in the common accidents of life, or, peradventure, in the initiatory symptoms of the disease itself, and that, too, without the least surprise that a disease so peculiar and definite can spring from such heterogeneous sources. The long array of morbific agencies marshalled forth on such occasions presented the show of knowledge, and many believe, to this day, that it is the very substance itself. It is only the old story of the omnipotence of names and figures ingeniously manipulated, and thus made to pass current with the ideas of the time. "We must consider," says Dr. B., "not the events of the preceding month or year, but the history of the individual from his birth, and that of his parents before him." He assigns a wider scope to the action of the hereditary element than any other English writer has, and where others would be content with some accidental incident, he goes back to the inmost springs of life in the patient or his progenitors. Whatever the form of the mental disorder, whatever events in the bodily condition may seem to modify its course, he looks for the really efficient agency behind them all. "When the patient is recovering, and bodily and mental health returning," he says, "the catamenia reappear and are said to have 'cured' the brain disorder. But the absence of the function is quite as likely to be the concomitant as the cause of the mental symptoms, and we may be drawn away from the true pathology by fixing our attention too much upon it. If we look at the general constitution and the past history of any one of these patients, what do we learn? That she has always been what is popularly called nervous or hysterical, prone to emotional display, to bursts of temper, to hysterical crying, exaggerated, it may be, at the menstrual period. Most likely other members of the family are nervous, possibly some are insane. Thus is the old story repeated—hereditary predisposition to nervous disorder, a proneness to be upset by trifling occurrences, an unstable cerebral condition, greatly influenced by sympathetic disturbance of the sexual organs and functions, and reacting in turn upon and violently exciting them." In adverting to the fact that in the majority of certificates of insanity the cause is reported as unknown, he remarks that in most of them we should more truly say "that the patient is insane because his father, or mother, or grandfather, or grandmother was insane before him." Everybody believes that insanity is sometimes inherited, and yet until quite recently few cases were supposed to have originated in this way. The failure to see the presence of this agency in the production of insanity arose, no doubt, from mistaken notions respecting the forms of its manifestation. If it could not be found in some progenitor, fully formed and obvious to the world, or could be traced in that shape only to a collateral branch of the family, it was readily concluded that there was no insanity in the family. This continued to be the prevalent view of the matter until it was shown to be grossly erroneous by some French observers of our time, especially Moreau de Tours. They showed that it is perfectly consistent with the laws of transmitted disease to suppose that the parental agency may not consist of overt insanity, but rather of a minor, undemonstrative form of mental obliquity, like eccentricity, for example, or some other form of nervous disorder, such as chorea, epilepsy, hysteria, catalepsy, or only of persistent pains in the head. The deviation from the healthy nervous condition implied by these affections reappears in a succeeding generation, either in the same form or in one of greater intensity, like that of overt, unequivocal insanity. Insanity, therefore, is generally the work of at

least two generations, and the more thorough our investigations of the antecedents of our patients, the larger will be the proportion found to originate in this manner.

It is one of the curious incidents connected with the old course of thought respecting the hereditary transmission of insanity, that nobody ever thought of inquiring after the exact status of the morbid element during the years preceding the final outbreak. For anything to the contrary, it seems to have been supposed that it laid utterly dormant, exercising no influence whatever on the thoughts, feelings, or conduct of the individual. When Townley, in England, some eight or nine years ago, killed the girl to whom he had been engaged, the doctors who undertook to investigate his mental condition regarded the question solely as one of sanity or insanity. It appeared that insanity had been among his progenitors, but nobody thought of inquiring whether the morbid germ transmitted to him might not, even in a latent state, have so vitiated the action of his mental machinery as to invert the ordinary relations of right and wrong. Like Maudsley, Dr. B. fully recognizes the existence of the *insane temperament*, as well as its agency in producing various abnormal manifestations of character. We rejoice at his hearty acceptance of an idea scarcely less important than any that has appeared in the literature of insanity since the doctrine of Pinel, that insanity may be confined apparently to the moral powers. It fills a void in our philosophy of diseased action, establishes a bond of connection between phenomena seemingly remote and diverse, and throws a flood of light over many an inexplicable phase of human conduct. Not to acknowledge its existence and observe its influence, is simply to ignore one of the most efficient agencies in the whole category of morbid activities. With such authority as that of Dr. Maudsley and Dr. Blandford, it is placed beyond contempt, even though it may fail at present to secure general belief.

Our author lays considerable stress on the classification of mental disorders, and quotes approvingly the methods of Dr. Skae and of Dr. Batty Tuke, for the reason, apparently, that the distinctions are drawn not from the mental symptoms, as in most other methods, but from some incidents connected with their origin. Thus, in the latter, we have, for instance, among the "sub-classes," epileptic, traumatic, enteric, puerperal, post-connubial, hysterical, climacteric, ovarian insanity, and the insanity of masturbation, of pubescence, etc. There is this curious fact connected with classifications of insanity, that while every author has unbounded faith in his own, he fails to induce anybody else to share it with him. The reason is, no doubt, that these methods are founded rather on some favourite notions of their several authors than any broad lines of distinction made by nature. The end and aim of all classification is to help the student to a better understanding of the things classified. So far, and only so far, as it contributes to this purpose does it ever possess any merit. That some of our patients have had rheumatism, and some hysteria, and others some affection of the ovaries or the bowels, that some have become insane soon after delivery, and some after prolonged lactation—all these are circumstances it is well for us to know, because they belong to the history of the case, and may guide us in our prognosis and treatment; and so would various other things we might or might not learn from the friends. But if these distinctions throw any light on the nature of the disease, or even help us to obtain a more orderly and systematic arrangement of our ideas, we can only say we fail to see it. Nobody will contend, surely, that such characters even enable us to recognize, when we see them, the forms of disease they are meant to distinguish. It would not enlarge our estimate of any man's sagacity who should go through the wards of an asylum, and say this patient was made insane by alcoholism, this by rheumatism, that by syphilis, that by a wound on the head, that is a puerperal and that a post-connubial case; nor would it much change our opinion if he had possessed abundant opportunities for observing these patients. It might seem, at first sight, as if this were nothing worse than a harmless piece of ingenuity, but we fear it is calculated to lead the student to look for what he cannot possibly find, and thus increase instead of relieving the difficulties of his task.

In this connection we cannot help expressing our surprise at our author's refusal to admit the *circular insanity*, or *folie circulaire* of the French, to the

dignity of a class, or even a species. He regards it as only a variety of what he calls recurrent insanity, "with an alternation in the emotional condition of the patient." We have been in the habit of considering *folie circulaire* to be as well marked and uniform in its characters as any other form of mental derangement. When recognized as such by the student, he is spared much of the embarrassment that would arise from the idea that it is only an anomalous or accidental variation from some more general type of disease. We might well doubt the value of any classification of mental diseases which failed to give a prominent place to one so common, so curious and important as this. Indeed, no form of insanity, excepting dementia perhaps, is so important in its medico-legal relations as this; and without a correct understanding of its character, the physician, in his capacity of expert, may inflict much wrong on one party or another. Except by chance, it could hardly be otherwise.

Our author very justly gives more prominence than any other English writer before him to what he terms acute delirious mania—a form of mania which, in the suddenness of its invasion, the rapidity of its course, the chaotic condition of the mind, and its imminent danger to life, may well be separated by specific distinctions from those manias which are marked by an incubation of months or years, by a slow, tedious course, and the almost entire absence of febrile excitement. It may well be doubted whether it is in every instance proper mania, for there is much reason to believe that sometimes its pathological conditions are not precisely those of the more common forms of mania. When the patient dies, as is often the case, the death is attributed, in our hospital reports, to exhaustion; and yet in these last-mentioned forms we see a high grade of excitement continuing month after month without the slightest sign of exhaustion. So strongly was the late Dr. Bell, of the McLean Asylum, impressed by the peculiar characters of this form of disease, that this acute observer of mental affections described it as a distinct species of insanity, and in this country it has often been called by his name. The ordinary practitioner is deeply concerned in making a proper diagnosis in these cases. If, acting upon the general principle that insanity is highly curable if treated early, he hurries off his patient to an asylum, he may have the unspeakable mortification of learning that he died on the way, or shortly after he entered. Let him clearly understand that here the question before him is, not whether his patient will recover his reason, but whether he will live or die.

Homicidal mania, erotomania, kleptomania, pyromania, our author considers as only manifestations of disease subordinate to some more general affection. So long as he admits the thing, we shall not quarrel with him respecting the form it may take, though we believe his doctrine on this point is wrong. He is evidently governed more by preconceived notions than by facts personally observed. "With regard to acts of theft committed by well-to-do women in a pregnant state, from supposed longings," he says, "I confess I should look upon any such with the greatest suspicion, unless there was other corroborative evidence of insanity." So, then, ladies who indulge in petty theft during their pregnancies, though otherwise models of every virtue and free from mental obliquities—and such cases have come under our own observation—he would incline to send to the penitentiary. Even so judicious an observer as our author needs to be reminded of that fundamental rule of scientific investigation, that the inquirer must make his theories conform to facts, and not facts to his theories.

On the subject of moral insanity, our author is in advance of many of his countrymen; but although he believes there may be insanity without delusions, he is quite sure there can be no insanity without intellectual impairment of some kind; and he examines very critically some of the recorded cases in order to show that in every one there was some hitch in their intellectual movements. We doubt not he is perfectly correct. Nobody ever affirmed that in every case of moral insanity the intellectual or reflective powers remained utterly unaffected in their attributes or operations. It needs no very large experience with the insane to satisfy the thoughtful observer that not unfrequently, even when the intellectual manifestations seem most correct, the patient entertains views utterly at variance with the convictions of all sane men. But this does not

deter us from asserting that many a patient whose conduct and demeanor show a high degree of moral perversity, betrays in his understanding no deviation from the line of healthy action. If any one is determined to believe, on the strength of a metaphysical speculation, that some such deviation must necessarily exist, we have no objection. What we do object to is the practical conclusion that no person can be pronounced insane who manifests no intellectual impairment or obliquity. Few persons, we apprehend, are ready for this. Most opponents of the doctrine of moral insanity, as they understand it, prefer the safer opinion that the intellectual lesion is there, though they may not be able to see it. It is a decided advance, however, to have such cases regarded as insanity of any kind, rather than moral depravity, and with this we may reasonably be content for the present.

Our author's directions respecting the treatment of acute delirious mania are well worth the cost of the book. He insists most strongly on the indispensable necessity of nutritious food and stimulating drinks. The importance of such treatment can be duly estimated only when we consider that within our day and generation this form of disease was attacked, even by the magnates of the profession, with bloodletting and tartar emetic, in most heroic measure, and that these were first discarded in favour of opium in large doses. These objectionable methods we meet with too often still, and it will be not one of the least of the merits of this book if it should help to banish them entirely from our practice. We are glad that Dr. B. bears such strong testimony against the use of blisters. They are much resorted to, in deference, probably, to an old pathology, for it is impossible to find any other reason, and a fearful amount of mischief they often accomplish. The inflammation is rapidly succeeded by obstinate suppuration, and a wide-spread ulcer, which exhausts the forces and causes infinite annoyance to the patients. Dr. B. also recognizes, what few writers have, the immense importance of the recumbent position. We fear that much of its benefit will be lost, however, if we rely solely on the efforts of attendants, in struggling with whom the patient will increase his excitement and waste strength that cannot be too carefully husbanded. Here, clearly, is a case for mechanical restraint. No sooner is the patient placed in the bedstrap invented by the late Dr. Wyman, which keeps him firmly on the bed while it permits considerable freedom of motion, than his struggles cease, and his mind, no longer irritated by the constant interference of attendants, becomes tranquil, if not ready for sleep. We cannot say that many a life has been saved by means of this admirable apparatus, but we are quite sure that no one has used it much without blessing the memory of Dr. Wyman. We say this for the benefit of Dr. B.'s readers in this country, for the whole matter of mechanical restraint is ignored in the book before us. The tide of public sentiment has been so long and so strongly setting against it in England, that it is now mistaken as a result not of a cheap sentimentalism, but of actual experience. Mechanical restraint in the management of the insane is spoken of as an unmitigated evil, and though the secret thought may not always coincide with the public utterance, few men are willing, by any show of self-assertion, to brave the vulgar clamor, in, as well as out of the profession. It is certainly very strange that at a time and in a country which are witnessing a toleration of opinion on matters of a moral and religious nature that would have seemed incredible fifty years ago, any diversity of opinion on a strictly experimental point is regarded as little better than one of the deadly sins.

Dr. B. believes in transitory mania, and speaks as if it were not a remarkably rare phenomenon. His language is worth noting:—

"The premonitory stage of an attack of acute delirium, or acute mania, may be extremely brief; in fact, a patient may awake out of sleep, and at once become delirious. The more sudden the invasion, the shorter will be the duration of the attack in the majority of instances, but to all such rules there are many exceptions. Sudden outbursts of delirious mania frequently have their origin in a mental cause, as the death of a friend, a suddenly announced misfortune, a violent quarrel, a disappointment or cross in love. Any such circumstance occurring to a person of weak nerve, hysterical, and by nature predisposed to mental disturbance, may bring about very acute delirium in a few hours. The

same thing may proceed from a cause clearly physical. It may arise in the course or during the decline of acute disease, as pneumonia, measles, or fever. It may come on in a patient who is phthisical, or has acute rheumatism, or who has undergone too severe fatigue, as a very long walk. It may succeed a paroxysm of epilepsy, or take the place of one. It may come on quite suddenly after childbirth, exposure to the sun, or indulgence in drink."

This being so—and the correctness of the statement cannot be reasonably doubted—is it anything more than might have been expected, if on the occurrence of some extraordinary event that wounds a person in his tenderest point, and in a moment blasts his prospect of happiness forever, his mind should so reel and stagger under the shock as to be utterly paralyzed as to any controlling influence it might exert over the tumult of the passions? Some eight-and-twenty years ago, a man in this city, of a "weak nerve, hysterical," and it may be "predisposed to mental disturbance," was suddenly informed of the marriage of a favourite daughter to a man whom he most thoroughly loathed and despised. In the mental agitation that followed, accompanied as it was by extreme restlessness and distress, by wild and disorderly movements, while evincing the utmost fondness for her, he proceeded deliberately to her chamber and shot her dead with a pistol. In the spirit of our author's remarks above quoted. this must be considered a case of excusable homicide, but it was not generally so regarded in those days. The man was acquitted, but we are not sure that by a single physician of any eminence was this result regarded as a triumph of justice and science. We are apt to believe, because insanity is usually manifested as a matter of disease, that a person cannot be suddenly bereft of his senses, though reeling under a blow that deprives him of every hope in the future. Undoubtedly the plea of insanity is sometimes urged when no such effect was produced, but that is a poor reason for believing that in every case of this kind the plea is utterly groundless. Such an opinion is founded on no very extensive knowledge of mental disease, and finds little or no support in the established laws even of bodily disease.

Our author's remarks on the signs of recovery are so sensible, and furnish so good an idea of his manner, that we venture on a liberal quotation. After stating that a renewal of the patient's affections, behaviour, and bearing, as manifested while unquestionably sane, is the surest sign of recovery, he shows the difficulty of learning this fact:—

"You who will become not asylum doctors, but family advisers, will first see a man sane, and then insane; and if at the termination of an attack of insanity you are called to examine him, you may be able to say at once that he is or is not himself, and may give most valuable assistance to the asylum doctor, who may erroneously suppose that he is not, or is, cured. Friends are apt to be biased, and near relatives are so often themselves crotchety and peculiar, that we hail with satisfaction the information to be gained from others. Friends are frequently over-eager to release the lunatic because of his displeasure, or overfearful of setting him at liberty lest he relapse. Alteration of character or manner will be a test of recovery when the patient is greatly improved, and has got rid of his delusions, when, in fact, it might be very difficult to sign a certificate for him. With all this amendment, his manner may not be natural. He may be unduly depressed, excitable, or irritable. His friends will ascribe this to the detention, if they wish his release, and will tell you they are quite sure that it is thus produced, and that it will pass away when the cause is removed. But it is a fact within my experience that we do not see this depression or excitement in those who are perfectly cured, and know that their stay in the asylum is only a question of weeks or days. Friends imagine that a patient cannot be aware that he is in an asylum without its having a prejudicial effect; but it is not so, for he will go on to perfect recovery in it, spite of their fears and remonstrances. Sometimes it happens that, when a patient is progressing favourably, and is not half, but wholly, cured, his friends are much more anxious for his release than he is himself. * * * It is a bad sign when a patient will not allow that anything has been the matter with him, or insists that his condition has been caused by his friends shutting him up, ignoring all that occurred before he was shut up, and attributing evil motives to all concerned."

Our author has some excellent remarks on the moral treatment of the insane —their occupations, studies, amusements—and the effect of hospital management; and we should deplore the necessity which forbids any further notice of them, did we not hope and trust that the reader will be only the more induced to go to the book itself. We are unable, however, to share the doctor's confidence in the greater advantages of non-asylum treatment in any considerable number of patients, though backed by the statement of Maudsley, who "feels most earnestly," he says, that he would "infinitely prefer a garret or a cellar for lodgings, with bread and water only for food, than to be clothed in purple and fine linen, and to fare sumptuously every day as a prisoner." The question is not what provision would most please Dr. Maudsley or any other sane person, but what will most promote the welfare, on the whole, of persons insane and more or less incapable of taking care of themselves. No doubt, most of the insane feel precisely like Dr. Maudsley, and would show how nicely they appreciate the sentiment, by jumping out of the window, or running away from their attendants, and drowning themselves in the nearest pond, or dying of starvation in the woods. No one would wish to place the least restraint upon the liberty of an incurable patient, as long as he used his liberty without manifest detriment to himself or others. On this point there can be no difference of opinion. The idea meant to be conveyed by the language just quoted is that many of the inmates of the hospitals and asylums might be allowed to go at large with increased comfort and enjoyment to themselves, and without any harm to others. Here we join issue with our author and his friends, and declare that their doctrine reflects rather the present fashion of thinking on this subject than the results of actual experience. Speaking for our own country, we do not hesitate to say that the proportion of patients in our hospitals for the insane capable of having their liberty under any practicable mode of living, is infinitesimally small. We know that the experiment is often tried, and we know, too, that a large proportion of those shocking atrocities committed by the insane, by which this or some other community near us is every week or two convulsed with horror, are the work of persons removed from hospital custody on the supposition that they may safely be allowed to take care of themselves. The advocates of the doctrine in question, when closely pressed, intimate that they would not withdraw the patient from all surveillance, but that it should be much less thorough and persistent than that exercised by a hospital. If this means anything, it means a deprivation of that complete liberty which is prized above purple and fine linen and sumptuous fare. It means restraint, and it is immaterial to the purpose of this discussion whether it be much or little. It is our deliberate opinion, founded on over thirty years' close observation of the insane, that the restraint required by their several necessities can be exercised nowhere else with so little discomfort and so little deprivation of proper enjoyments as in the modern hospital for the insane. The disposition just now to drop all special custody and management of the insane, and place them in the ordinary relations of life, according to their rank and means, finds no support in a careful and extensive observation of the ways and feelings of these people. It ignores the fact that they are all labouring under a disease, changeable and capricious in its manifestations, liable in its various phases to present new obliquities of intellect and new perversities of spirit, and therefore to be met at every turn, and in the manner best calculated to promote their welfare, by instrumentalities which have sprung from the science and humanity of the age. It was once supposed that a great advance was made in civilization when the Tom à Bedlams were collected together into comfortable abodes where they ceased to frighten people, and relieved their friends of further anxiety for their safety. But now it seems, according to the lights of this present generation, that our boasting is all in vain—that what we rejoiced to consider a triumph of modern civilization is only a great mistake. In response to the new idea, we have now to open the doors of our hospitals and let their inmates go—some to their own homes, if they have any, others to board with poor families in the country, who are expected somehow to make their boarders remunerative even at a very low rate of payment. All this implies, both on the part of the sane and the insane, a sort of Arcadian simplicity which has never yet come within our experience,

and until it does, we must decline to accept this new Evangel of liberty to the insane.

In the closing chapter Dr. B. gives some hints respecting the manner of examining patients with reference to their mental condition, for the purpose of signing a certificate of insanity. They evince a very exact appreciation of the questions involved in the performance of this duty, and will be found exceedingly useful in practice. On one or two points we wish he had been more definite, for while he sets forth the difficulties the physician is liable to encounter, he fails to show how they may be most effectually met. The subject is so important, and there is so much misconception of the true duty of the physician whose service is required for the purpose in question, that we venture, at the risk of being tedious, to dwell upon it for a moment.

The patient is supposed to be smitten with a disease the existence of which the physician is to establish by some of its accredited manifestations. There being no symptom, nor aggregate of symptoms, of a physical nature, which could warrant this conclusion, he is obliged to depend on the mental manifestations, and their significance is not always of the clearest kind. If he utters some gross delusion—if he believes that he is the son of perdition, or that his adversaries have surrounded him with a cordon of galvanic batteries that annoy him perpetually—the case is clear. But he may utter no delusion whatever. When questioned respecting certain transactions which were really prompted by mental disorder, he gives coherent and plausible reasons for his conduct in which there is no single proposition sounding to folly. He may have bought an estate beyond his means and unsuited to his station; he may have embarked in some speculative enterprise likely to ruin his fortunes; he may have been roaming about the country, by night and by day, in sunshine and storm; he may have beaten his children and turned his wife out of doors; and yet in regard to all these things he may offer reasons unsatisfactory, no doubt, but not clearly irrational. The estate was wonderfully cheap, perhaps, or well suited to some contemplated change of business; the speculation was not more absurd than many entered into by men whose sanity was never questioned; if his journeys were sometimes unseasonable, there were always good and proper objects in view; in chastising his children he was only performing a high religious duty, and if his wife preferred the outside of the house it was no fault of his. Now as every one of these acts might have been performed by sane men, what is to warrant the physician to accept them as indications of insanity? He may be told by others—by family or friends—that all this conduct is strange and unnatural, totally different from his ordinary ways, habits, and feelings; that it implies a radical change of character, without any adequate cause but that of disease. He has but one alternative, viz., either to conclude that the man is insane and give the certificate on the strength of that statement, or decline to act because he is unable to verify by his own personal knowledge the essential fact. If physicians are to be governed by the latter branch of the alternative—taking cognizance only of what they see and hear—then many insane people will have to go at large, and our hospitals may be reduced to a much smaller capacity. Families resorting to their life-long medical advisers for counsel and assistance, will find themselves deserted in the moment of their utmost need. Why, in investigating the mental condition, we should reject the kind of evidence which we gladly avail ourselves of when it is a question of bodily ailment, is not very obvious. Then we do not hesitate to seek information from nurses and friends, and often are chiefly guided in our diagnosis and treatment by what they tell us. In mental far more than in bodily diseases we are dependent on them, because the patient is incapacitated by the nature of his disease from giving reliable information. The essential facts in the case, if he notices them at all, are so distorted by his diseased perceptions, that, in the shape they are put, they become a source of error and confusion, and will surely mislead whoever relies upon them for any practical purpose. The intelligent physician understands this, and acts accordingly; and here appears his curious inconsistency. He is satisfied by the evidence of others that his patient is insane, and he prescribes the requisite treatment, advising measures, perhaps, that involve considerable expense and trouble; but the moment removal to a

hospital is proposed, his confidence in his diagnosis is gone, and he declines to certify under his own hand and seal a fact upon which he has been acting for weeks together. True, it may be replied that his refusal to give the certificate arises not from any doubt of the correctness of his opinion, but from the apprehended difficulty of making others—lawyers and judges, for instance—believe it. He stands in fear of being reproached, if not punished, for certifying a fact on the representations of others, which sends a person into close confinement. We do not ignore the danger, but we cannot see how it exonerates the physician from the performance of his duty. He might, for the same reason, decline any other professional duty involving much difficulty and responsibility, but we are not sure that he would thereby enhance his own reputation. Far better is it to stand by the doctrine, in courts as well as out of courts, that the evidence of others besides the patient is a legitimate foundation for a professional opinion. Let it be considered an established thing that in a conflict between medicine and law on such a point, the latter must go to the wall. Laws may be changed by the will of man; the truths of science, never.

While we have been obliged occasionally to dissent from Dr. Blandford, we would not have it supposed that we thereby abate one jot of the praise we have bestowed on the general merits of the work. So good a book can well bear a little criticism, especially when it reveals neither weakness nor self-conceit, but only an honest, thoughtful difference of opinion. We end as we began, in heartily recommending it as a most useful and reliable guide to the general practitioner.

The synopsis of the laws in the different States of the Union, added in the American edition, will supply a want much felt by the practising physician. In this State, and the same is probably true of other States, a large proportion of the patients are sent to hospitals without regard to the requirements of the law, and consequently the parties are put to additional trouble and expense.

I. R.

ART. XXVII.—*Der Scheintod Neugeborener.* Sendschreiben an Herrn Dr. C. LUDWIG, Professor der Physiologie in Leipzig, von Dr. B. S. SCHULTZE, Professor der Geburtshülfe in Jena. 8vo. pp. 179. Jena, 1871.

Stillborn Infants. An Epistle addressed to Dr. C. LUDWIG, Professor of Physiology in Leipsic, by Dr. B. S. SCHULTZE, of Jena.

IT could scarcely be expected that an octavo volume of one hundred and seventy-nine pages could be profitably occupied by a consideration of the single subject of stillborn infants, without its being eked out by a long series of minutely detailed cases, especially when the small space usually allotted to it in our standard works on midwifery is considered. Yet we must confess that Dr. Schultze's volume is replete with instruction of a strictly practical character. This latter commendation may, perhaps, be thought inapplicable, at least, to the section which treats of the medical history and bibliography of the subject of Dr. S.'s "sendschreiben." Though not in a strict sense directly practical, yet this section is sufficiently interesting, and may even become indirectly practical also, by serving as an index to the experience and conclusions of preceding observers. The chapter on the physiology of the fœtus in utero is particularly full, and forms an appropriate introduction to the inquiry into the several causes by which the healthful play of its several functions may be impaired or destroyed.

The condition of a stillborn infant is, according to Dr. S., in all cases one of asphyxia. A condition resulting from the action upon the infant before birth of certain morbific causes, the asphyxiating action of which continuing after birth without necessarily involving the extinguishment of life. Many objections have been made to referring in all cases stillbirth to a condition of asphyxia, among which stands prominent the fact that the stillborn sometimes present an anæmic, and at others an apoplectic condition. Under both Dr. S. nevertheless insists that the stillbirth is one of actual asphyxia. The mass of blood, in

the one instance, is insufficient to enable it to take up and convey an adequate amount of oxygen to the medulla oblongata, the excitability of which is in consequence reduced and finally extinguished. If the diminution in the mass of blood takes place very suddenly, deficient respiration also occurs, as any one may convince himself who watches the effect of a sudden detracting or loss of blood. On the other hand, the apoplectic form of asphyxia is when the medulla oblongata is not in a condition to respond to the normal excitors presented to it, in consequence of which there occurs in the child *in utero*, indirectly, an interruption to the action of the "respiratory function" as well throughout the tissues of the unborn infant, as in the placenta; the blood is thereby rendered deficient in oxygen, and the veins become loaded with undecarbonized blood, which, at birth, becomes an efficient cause of continued or increased apnœa.

We present the following as the author's general statement of the four pathological conditions into one or other of which stillborn children are distributable:—

1. A so greatly diminished excitability of the medulla oblongata, that under the normal excitants the proper nervous influence from it is no longer transmitted to the respiratory apparatus, hence there necessarily results a deficient supply of oxygen to the blood.

2. A deficient oxygenation of the blood, and its necessary concomitant, an abnormal accumulation of carbon in the blood. Circumstances which continue in close relationship, so long as the circulation and respiration remain suspended.

3. Constant lessening in the force of the circulation from the slowness of the heart's contractions, and the immediate and secondary consequences, causing what may in some sense be considered as a compensatory movement, besides overfilling of the heart with blood, directing the flow of the latter towards the thorax.

4. The clogging up, to a greater or less extent, of the trachea with liquor amnii, meconium, slime, and blood.

1. To arouse the suspended vitality of the stillborn who fall within the *first* proposition, in other words, to overcome the defective excitability of the medulla oblongata, presents, according to our author, three indications: either to increase the excitation of the medulla, so that the respiratory nerves shall react; to endeavour, by acting upon the peripheral nerves, to excite the action of the respiratory muscles; or finally, to endeavour to reinstate the normal excitability of the medulla. By a reflex action produced by an excitement applied to the surface, it is often possible to procure the desired effect. As by sprinkling cold water upon the infant's face, upon the neck, or the præcordial region; rubbing the surface of the latter parts with snow; the application of ether to the præcordia; slapping the buttocks or back with the hand; or slight blows with a leafy twig upon the skin; injections of cold water per anum; allowing the fumes of ammonia to pass into the nostrils, etc. The most certain of the means for exciting the action of the respiratory muscles is, perhaps, the sudden momentary immersion of the infant up to its shoulders in a pail of cold water. In very desperate cases, it has been recommended to arouse the latent excitability of the diaphragm by an electric current directed in the course of the phrenic nerve. It does not seem, however, to receive the hearty commendation of Dr. S.

It must be evident that the most rational method of rousing to activity the inert functions of the several vital organs is only to be attained by securing a prompt and active renewal of the respiratory function, and a consequently regular and adequate supply to them of arterial blood.

2. In the cases of stillborn embraced by the *second* proposition, there is a deficiency of oxygen. Now, after birth, this deficiency can be supplied only through the lungs; and hence, in the absence of natural respiration, an attempt must be made to imitate it artificially. Besides the direct excitation of the respiratory movements, by an electric current directed upon the phrenic nerve, the lungs may be inflated by forcing air into them through the mouth or nose of the infant, by means of the mouth of the obstetrician himself, or through a catheter, by means of a syringe; and at the same time so manipulating the body

of the infant as to cause, as far as possible, expansion and contraction of the chest; premising the effort at inflation, by clearing the trachea with a syringe through an elastic tube, of whatever fluids it may contain. The objections to the inflation of the lungs of stillborn children are fairly stated by the author. When, however, the operation is skilfully and cautiously performed, and the filling and emptying of the air-cells of the lungs is promoted by the proper handling of the infant's body, we have found it, in the general run of cases, the most efficient means of removing the asphyxia, and permanently re-establishing the suspended respiration. When persevered in sufficiently long, in our hands it has seldom failed.

3. In reference to the cases of stillbirth embraced by the *third* proposition. It may be understood that when the infant is born deeply asphyxiated, with very slight action of the heart, while the blood in the capillaries of the lungs is almost stagnant, how little of the circulating mass can by artificial inflation of the lungs be brought in contact with oxygen. Hence, the increased action of the heart caused by such means is only of temporary continuance. Artificial respiration can only be productive of permanent results when, at the same time, there occurs, as well through the vessels of the lungs as throughout the entire ramifications of the aorta, a life-supporting circulation of blood. But while the immediate result of artificial respiration may be only circumscribed and temporary, nevertheless the artificially excited action of the respiratory organs may become ultimately the cause of the reinstatement of the excitability of the nervous centres, and thus be the means of recalling the normal activity of the respiratory muscles. When, as in cases where the stillborn child is so intensely asphyxiated that the action of the heart is suspended to such an extent that its influence upon the difference in the flow of blood through the venous and arterial systems of vessels is such that a resulting cessation of the entire course of the blood would seem to be at hand, the only hope of saving the infant is in the possibility of a renewal of the excitability of the medulla oblongata, and the consequent supply of the requisite amount of oxygen to the blood, by increasing the force and activity of the circulation and in equalizing the difference in the tension of the blood in the arteries and veins. When there exists a constantly increasing deficiency of oxygen, it is by an increase in the excitability of the centres of the motor nerves of the heart that we are to seek the means for bringing about the desired result, and accomplishing a change in its proper activity in respect to the intra-thoracic pressure.

Already by each quiet expiration, still more through each increase in the fulness of expiration, the pressure upon the arterial blood throughout the body becomes evidently increased, partly by reason of the contraction of the heart following the succeeding contraction, as the division of the vagus nerves shows, and partly by the action of the thoracic pressure upon the column of blood. When, as may be the case, the asphyxia in new-born children is very intense, the first factor in great measure failing from the defective excitability of the centre of the motor nerves of the heart, it is essential that the second factor be brought as quickly as possible into activity. The influence of the respiratory deficiency upon the tension of the blood in the arterial system is in an inverse condition to that in the venous. From the simple fact of the persistence of the fœtal valvular arrangement of the heart, it becomes clear, *a priori*, as is the fact proved, also, from observation, that every increase of tension exerted upon the column of blood in the aorta causes a diminution of pressure in the contents of the jugular veins, while a diminution in the arterial pressure is followed by an increase in the veins of the trunk. The difference in the pressure upon, as well, the blood in the arterial system and its ramifications over the entire body, as in the entire venous system, results from a simple expiration from and an inspiration of air into the lungs, and is increased by the simple systole and diastole of the heart. The ordinary deficiency in pressure upon the blood in the jugulars produced by ordinary inspiration is doubly compensated by the systole of the heart, while by deeper inspiration the deficiency is rendered fourfold. Now, there is no way in which an already existing difference in the circulation through arterial and venous trunks can be

rectified, so long as the valve arrangement of the fœtal heart persists, even in the new-born infant, excepting by acting upon the capillaries, and by accelerating thus the movement of the entire circulation.

This, it is supposed, may be effected by first inflating the lungs, and then causing expiration by an intermittent compression of the thorax. Dr. S. passes in rapid review the leading plans suggested for the attainment of artificial respiration, most if not all of which he finds to be not calculated to effect well or entirely the end proposed. He notices Dr. Marshall Hall's plan for the recovery of the apparently dead from drowning, and thinks it may be advantageously resorted to in the lighter cases of asphyxia in the stillborn.

For more than twelve years, Dr. S. assures his friend in Leipsic, he has followed a process of artificial respiration in cases of profoundly asphyxiated new-born children, of which he speaks in the highest terms of commendation. When timely and perseveringly put in practice, according to his experience, it seldom fails to procure perfect resuscitation, even in cases where a prompt resort has been had to artificial inflation of the lungs, which, after much loss of time, has failed of the desired result. The plan of the author is, as he states, calculated to cause at one and the same time a movement of the ribs and diaphragm, so as to bring about, as far as possible by artificial means, a regular alternate expansion and contraction of the thoracic cavity. The process alluded to is thus described: The infant is to be taken by the shoulders, in such manner that the operator's two thumbs shall lie upon the anterior wall of the thorax, while from behind the index fingers are inserted in the infant's axillæ, while the three other fingers of each hand are passed over the posterior wall of the thorax; the head of the infant resting in the hollow of the hand, supported on each side by the edge of the ulna. The operator, his lower extremities somewhat separated, places the stillborn infant, thus held, near the floor, its arms extending upwards, somewhat in advance of him, he, at the same time, stooping of course slightly forward; without delay he now swings upwards with arms extended the infant, until it rises to a position that brings the arms of the operator very nearly to or rather above a horizontal position; holding it gently but securely, without allowing its body to incline too far forwards, he now gradually turns it over, the weight of its pelvis being thus brought to press upon the abdomen, care being taken that in grasping the infant no compression is made upon the thorax. Its entire support should be by the fingers of the operator inserted in the axillæ. In the upward toss of the infant's body, it must be evident that the necessary curvature of the spine can in no degree encroach upon the thorax, it being almost exclusively confined to the lumbar vertebræ. The thumbs, without exerting pressure upon the ribs, constitute the axes, as it were, upon which the infant turns to commence its slow descent.

The swing of the infant's body into the horizontal position is produced by a movement of the operator at the shoulder-joint; the upward movement of his arm becomes now slower, and is performed by a carefully measured movement of the elbow-joint with a regulated movement of the shoulder-blade upon the trunk. By the thus effected downward movement, the pressure of the infant pelvis as it passes over the abdomen is brought to bear upon the organs of the thorax as well from the upward forced diaphragm as from the compression throughout the entire extent of the thoracic parietes. As a result of this passive expiratory movement, there is often forced out a copious flow of fluid from the larynx and trachea. When the body of the child has been brought down completely to the position into which it was first placed, the operator puts it upon the stretch by bringing it with a brisk upward and backward movement into the space formed by the separation of his legs. The thorax being free from all pressure, the thumbs of the operator lying loose upon the infant's breast, becomes by its own elasticity dilated—provided the entire weight of the infant is allowed to hang entirely upon the index fingers of the operator, so as to allow, by the fixation of their sternal extremities, the ribs entire freedom of action. Thus is brought about, artificially, a very full inspiration. The upheaving movement is again, at the end of a few moments, to be renewed, followed by the slow descent, with the thumb of the operator now firmly pressed upon the anterior parietes of the child's chest. Again occurs mechanical

expiration, accompanied, perhaps, by a more copious discharge of fluids from the mouth and nose, and frequently of meconium per anum.

The preceding manipulations are to be repeated for some eight to ten times. Soon the air will be distinctly heard passing through the glottis. If with the expiration, as it constantly augments in force, fluids still continue to be passed from the mouth and nose, the process as above must be persevered in, and until free spontaneous respiration becomes fully and permanently established; which result may be rendered more certain by plunging the infant's body into a warm bath.

By the above description of the plan of Dr. S. for the production of artificial respiration in the stillborn infant there are fulfilled, it will be perceived, three of the required indications for the accomplishment of resuscitation, as certainly as could be expected It rapidly equalizes the difference between the tension in the arterial and venous streams of blood, and thereby brings the circulation into its life-supporting condition; while, at the same time, it brings about a regular change of atmosphere in contact with the air-cells of the lungs, satisfying thus the second indication; while by thus accomplishing the arterialization of the blood, the first indication is fully carried out, and finally the excitability of the medulla oblongata is restored, when this is possible, as rapidly as may be.

4. Cases of stillbirth embraced by the *fourth* proposition are those in which the impediment to the setting in of respiration consists simply in the air-passages having become clogged before birth, with mucosites, etc. The resuscitation in such cases is to be effected by the removal of this impediment, which may be done by a sucking effort of the operator's mouth applied directly to the mouth of the infant, or through an elastic catheter passed into the larynx, or by a syringe and elastic tube. Dr. S. discusses very fully the question of catheterizing the trachea in these cases. From the well-founded objections that may be brought to bear against it, he would prefer in nearly all cases a resort at once to his method of effecting artificial respiration, which he believes will always promptly succeed.

We have thus endeavoured to give a brief sketch of the more practical portion of the volume before us, but one we trust sufficiently full to communicate to our readers a clear idea of the author's teachings. D. F. C.

ART. XXVIII.—*A Cyclopædia of Quantitative Chemical Analysis.* By FRANK H. STORER, A. M., Professor of General and Analytical Chemistry in the Massachusetts Institute of Technology. Part I. pp. 112, and Appendix. Boston: Sever, Francis & Co.

PROF. STORER is already well known to chemists by his *Dictionary of Solubilities*, a work which may be cited as a model of what such a dictionary ought to be, and which the working chemist needs to have always within reach. After publishing some other less important but useful text-books, Prof. Storer has again undertaken a comprehensive and laborious work, the object of which is to enable the analyst, at a glance, to take in all the methods that have been proposed for attaining whatever special end he may happen to have in view. He remarks in his preface:—

"The object of the author in compiling this book has been not only to provide the student and working chemist with a comprehensive dictionary of quantitative processes, but to call the attention of the chemical fraternity to the question of the possibility of presenting this branch of chemical art in a more serviceable and manageable form than has been customary hitherto. The experiment is certainly worth trying, whether a definite system of classifying substances in alphabetical order, and of referring each and every process to the fundamental fact or *principle* upon which it depends, will not greatly facilitate both the study and practice of analysis."

The author correctly judges that the aim of recent publications has been too

much towards abbreviation and condensation, whereby a danger of obscurity is always introduced (*brevis esse laboro obscurus fio*). Analysis is always a matter of detail, and such a subject can never be advantageously generalized. The methods that suit best in one case do not in another, and the chemist will always desire to make his own selection from the widest possible range of information.

These views are applied in the following manner: under the head of each substance are placed in succession the principles upon which the different methods of analysis are founded; then under each principle the different methods of applying it.

But an example will serve better than any explanation to give a just idea of this excellent method. Taking *Arsenic*, for example, we first find under that heading the various forms in which that substance is weighed after separation. Then comes "Principle 1, Sparing solubility of the metal in chlorhydric acid," followed by the applications of that principle. Next, "Principle 2, Volatility," followed similarly by the particular applications of that principle and methods of applying it. Again, "Principle 3, Oxidation by chlorine in alkaline solutions," with its appropriate treatment.

The language is clear and perspicuous, and the author has avoided the fault of running into long paragraphs. Nothing enables a student to seize so rapidly and intelligently the information placed before him more than a judicious paragraphing of the text, such as keeps the respective portions of matter well separated, and when we see this result attained, we always take it as a proof that the writer has well digested his subject before commencing to put it on paper.

The portion of the work now published reaches to Carbonate of Silver, comprising 112 pages of double column and small type. We trust that the remainder of the work will not be long delayed. M. C. L.

ART. XXIX.—*Transactions of State Medical Societies.*

1. *Transactions of the Medical Association of the State of Alabama, Session of* 1870, *held in Montgomery, March* 15, 16, 17. 8vo. pp. 445.
2. *Transactions of the Medical Society of the State of West Virginia* (*Instituted April*, 1867), *held June* 1, 2, 1870. 8vo. pp. 78.
3. *Transactions of the New Hampshire Medical Society* (*Eightieth Anniversary*), *held at Concord, June* 21–22, 1870. 8vo. pp. 96.
4. *Proceedings of the Convention for the Reorganization of the Medical Society of the State of California, and of the Annual Meeting of the Society, held in San Francisco, October* 19–20, 1870. *Together with the Constitution and Code of Ethics.* 8vo. pp. 40.
5. *Transactions of the Twentieth Anniversary Meeting of the Illinois State Medical Society, held at Dixon, May* 17–18, 1870. 8vo. pp. 141.

1. THE transactions of the *Alabama State Medical Society* are highly creditable to the profession. The reports from the several counties of the State are replete with matter both interesting and instructive. A few present meteorological observations accurately kept, apparently, by a close reference to the thermometer, barometer, hygrometer, the rain gauge, and the course of the winds, &c. Others, again, present brief descriptions of particular forms of disease as it appeared in certain localities, often practically illustrated by the history of cases, the whole presenting a mass of valuable information.

The volume of transactions, which is beautifully gotten up, opens with three addresses, namely, "The Annual Address," by the President, R. F. MICHEL, M. D.; "Annual Oration," by G. A. KETCHUM, M. D.; and a "Valedictory Address," by J. M. WILLIAMS, M. D., which latter, though somewhat too pretentious in style, is unexceptional in sentiment. The themes they all discuss are the character, the worth, the education, the work, and the responsibility of physicians, and the necessity of their organization for the promotion of their

own good, the diffusion of professional knowledge, for the defence of their own rights, and to best secure the good of the community.

The report from Dallas County presents some judicious remarks on the history, uses, and abuses of the "Obstetrical Forceps," by W. P. Reese. The instrument, we opine, is as often abused by its neglect at the proper period, in appropriate cases, as it is by its unskilful use, or by its too frequent employment inopportunely, and when not demanded for the safety of mother or child.

A very instructive paper follows, by A. G. Mabry, M. D., on the "Medicinal Properties of Sulphate of Quinia;" and one, by the same gentleman, on "Hemorrhagic Intermittent Fever;" a disease which has recently occurred to some extent in certain malarial regions of the South, and of which the pathology and treatment have elicited no little discussion. By a resolution, the State Medical Association of Alabama has declared that, as the disease referred to does not always assume the intermittent form, in its judgment the most proper name for it will be "Hemorrhagic Malarial Fever."

The report from Lowndes County contains remarks by D. S. Hopping, M. D., on the "Pathology of Malarial Hæmaturia," of an interesting character. It is the same disease as that described above as hemorrhagic intermittent fever.

In a supplement to the report from Mobile County, Dr. Jerome Cochran gives the history of two cases of "Ovariotomy." In both cases there was separate ligation of the vessels of the pedicle. One case terminated successfully, the other fatally.

The same report contains the history of a case of "Pelvic Peritonitis, with Hæmatocele and Abscess of the Left Broad Ligament." An instructive case, the account of which does not readily admit of a satisfactory epitome.

The next case embraced in the report is one of "Vaginismus," of a very aggravated character, in a mulatto girl, aged 19 years—epileptic. The suffering of the patient was so intense upon the least attempt to penetrate within the vulva, that it was decided to perform the operation suggested by Sims in such cases. Accordingly, the patient being under the effects of chloroform, the remains of the hymen were removed; the sphincter vaginæ muscle was cut through on each side, about half an inch from the commissure, the incision being extended to the raphé, making each incision two inches in length. During the first six or eight days, the introduction of the dilator caused a great deal of pain, so much, indeed, that on two occasions it was found necessary to administer chloroform before it could be accomplished. No further trouble was experienced in the after-treatment, so far as the vagina was concerned. The dilator was, for a time, worn two or three hours every day; in the intervals, the vagina was plugged with cotton wet with glycerine. The wound healed up completely, and every vestige of vaginal tenderness disappeared in less than a month. The cure was complete and permanent. "Not only was the vaginismus relieved, but the patient has had no more pelvic neuralgia, not another attack of epilepsy, nor any more hysterical trouble."

Appended to the report from Montgomery County is a paper from R. F. Michel, M. D., containing his objections to the term "*Purpuræmia*," as applied to the disease known as "Hemorrhagic Malarial Fever." We admit the soundness of the doctor's objections; at the same time, we hardly think it well to dispute about the name of a disease, in relation to the true pathology of which there would seem to be, as yet, no unanimity of opinion among those who have had an opportunity of studying it.

2. The session of the *Medical Society of the State of West Virginia* for 1870 was opened by an address, in the absence of the President, by the First Vice-President, Dr. E. A. Hildreth. It is a short, unpretentious production, confined mainly to an exposition of the leading objects of the Society.

The first of the professional papers is a "Report on the Topography, Climatology, and Epidemic Diseases of Wood County," by Dr. E. D. Safford, which contains a very graphic description of what Dr. S. terms a "malignant bilious remittent fever, approaching as nearly yellow fever as the locality allowed;" the same disease, evidently, as has received, further south, the name of hemor-

rhagic malarial fever. The prevalent endemics of Wood County are stated to be "remittent and intermittent fevers, dysentery, pleurisy, and pneumonia."

A communication follows, from Dr. J. C. HUPP, on the "Hydrate of Chloral in Puerperal Insanity." So far as the experience of Dr. H. goes, he has found the remedy, when administered in this disease, to act kindly, promptly, and satisfactorily. Cases, remarks Dr. H., might be multiplied, showing results most satisfactory, from the use of this new and comparatively untried agent. In facial neuralgia, sick headache, delirium tremens, and in wakefulness or restlessness in surgical and other cases, he has used chloral with uniform satisfaction. He gives it, usually, first in *sedative* doses, say from 2 to 5 grains every 20 to 60 minutes, then increases the dose to 10 or 15 grains at the same intervals, if its hypnotic effect was desirable.

The next report, on the "Meteorology and Epidemic Diseases of Ohio County," by Dr. E. A. HILDRETH, presents a history, marked by good sense and much practical acumen, of the prevalent diseases of the county. Dr. H. notices the continued increase in the prevalence of phthisis pulmonalis in his vicinity, and other parts of our country. To the correctness of his remarks, that the disease "appears to *attend the advance of civilization*, and *increase its ravages in proportion to increase in enlightenment*—being *almost unknown to savage life*," we cannot assent; the increase of pulmonary consumption has no necessary connection with the advance in civilization and enlightenment among our people. We admit that in furthering that increase, increased wealth, prompting our people to exchange the simple, active out-door life of former times for the comparatively inert in-door life of luxury and ease of the present day, plays an important and prominent part. The supposed exemption of "savage life" from consumption will not, we think, be verified by a careful examination of facts.

The longest report, occupying over twenty pages in comparatively small type, is that by Dr. J. FRISSELL, on "Stone in the Bladder and Urinary Passages." Dr. F. makes no pretension of having presented "anything new in principle or practice in reference to this important subject." He merely gives, "in as short a space as possible, what he could remember or collect together of cases that had come under his own observation, or within his own knowledge, or that of his medical acquaintance, during a residence of more than thirty years in Wheeling." The report is replete with valuable matter, but will not admit of a satisfactory analysis.

In an interesting communication, Dr. WEISEL describes a "New Stethoscope," for which he claims the following advantages: It is portable; does not obstruct the ear; excludes all mechanical sounds; and combines the mediate and immediate methods of auscultation. The instrument consists of "a simple ovoid cylinder of wood, one and a half inch in depth, which fits over the external ear, one end covered up by a cushion to fit the irregularities of the head, and an elastic band which passes around the forehead to hold it in its place."

3. The session of the *New Hampshire Medical Society* was opened by an address from the President, Dr. W. W. BROWN. After a few remarks upon "The Progress and Present State of Medical Science," the closing part of the address is devoted to a consideration of its present condition and future tendency, embracing the all-important question: "How will our present mode of practice compare, as to utility, with that pursued by our predecessors half a century ago; and are our patients safer in our hands than were our ancestors, when sick, in theirs?"

The first of the professional reports, on "Surgery," by Dr. M. W. RUSSELL, is able and instructive.

The next communication, "The Medical History of New Hampshire," by Dr. A. B. CROSBY, although, at first sight, it might be esteemed as dealing in subjects of simply local interest, yet we are persuaded that, in the sketch it presents of the early medical history of one of our "olden commonweals," and of the history of Dartmouth Medical College, with a brief notice of a few of the most distinguished of the physicians of the State, who have passed from among us, all the profession throughout the Union will feel a deep interest in it.

A most able, opportune, and truthful paper, on "Nutrition in Disease," is

communicated by Dr. G. P. Conn. "We may lay it down," he says, "as a practical fact, that any affection which does not compromise directly the functions of the heart and lungs, cannot produce death so long as the nutrition of the body is maintained to a point compatible with life; and unless the disease involve an insuperable obstacle to the ingestion of food, or its assimilation, we can, if particularly attended to from its inception, so sustain a healthy standard of nutrition that the structure of these vital organs will not become seriously impaired. Again, if inanition is not the necessary effect of the existing disease, but is due to insufficient alimentation, starvation will cause death, though the progress of the disease *per se* be favourable, and we can easily see that at first it was merely an incidental element."

The volume closes with an "Obituary Notice of Dr. John Clough."

4. The proceedings of the Convention of Physicians of California, which assembled in San Francisco, October 19, 1870, in pursuance of a call issued by the State Board of Health, to effect a reorganization of the State Society, and the transactions, also, of the first annual session of the society, held on the same day, are interesting so far as it furnishes us with the evidence that the physicians of California became incorporated (Nov. 1, 1870) into a State Society, that they may, by their joint labours, as expressed by Dr. T. M. Logan, Secretary and Executive Officer of the State Board of Health, in his address of welcome to the gentlemen composing the reorganizing Convention, "bring the members of the profession throughout the State into harmonious unity of action; to cause mind to bear on mind; to work out the problem of climatic influences on the physical condition of man; to investigate the nature and causes of endemics and epidemics; to determine the best method of holding life and health in integrity, and to remedy the evils incident to human existence."

No communication on any professional subject was presented at the first annual session of the reorganized State Society. A very spirited series of resolutions were passed, calling upon government to confer upon the surgeons in our navy such military rank as will save them, in the future, from similar insult and injustice to that recently inflicted upon one of their corps; a repetition of which in the future will most certainly have the effect of depriving our national ships of the services of high-minded, well-instructed, and efficient medical officers, while it entails no little disgrace upon our country.

We congratulate our professional brethren of California upon their successful reorganization, and trust they may be as successful in carrying out the important objects at which it aims.

5. The communications in the volume of *Transactions of the Illinois State Medical Society*, at the session of the past year, confer no little credit upon the members by whom they were respectively prepared. The first report is on "Practical Medicine," by Dr. J. S. Whitmire. After a brief sketch of the medical topography and meteorology of the leading counties of the State, the prevalent diseases of the preceding twelve months, 1869–70, are noticed, among which stands predominant *epidemic scarlatina*. The treatment pursued in this disease was of a sustaining character—iron, quinia, chlorate of potassa, etc.; attention to bowels; daily sponging with a warm alkaline solution; a gargle or wash for the throat, composed of alcohol, ℥ss; elix. vitriol, ʒij; alum, ʒj; creasote, forty drops; ol. cinnamon, eighty drops; and simple syrup, ℥iijss; clean, airy apartments, and plenty of beef-tea or milk as food. Under this treatment the patients generally got well. In calming the restlessness attendant upon cerebro-spinal meningitis, and also in chorea, Dr. W. speaks favourably of the action of *hydrate of chloral*.

The second communication is on the "Non-necessity of Bloodletting in the Treatment of Pneumonia," by Dr. D. W. Young.

The report on "Surgery," by Dr. Moses Gunn, presents, among other subjects, some pertinent remarks on "Excision of Hip-Joint," which, in many cases, will afford prompt and permanent relief from painful and exhausting symptoms, and, in conjunction with appropriate constitutional medication, diet, and regimen, will often restore a patient to even robust health. The question of "Nephrotomy and Renal Lithotomy" is briefly considered. The true char-

acter of "Colles's injury of the ulna, near the wrist-joint"—fracture with luxation—is inquired into, and its proper treatment very fully considered.

The next report, on "Drugs and Medicines," by Dr. C. HUNT, commences with some desultory remarks on "Sophistication and Sale of Drugs and Medicines;" then notices the "Hydrate of Chloral," and its superiority over other hypnotics. The therapeutic value of "Bromide of Potassium" is next considered, and the range of cases to which it is adapted. Reference is also had to the use of "Carbolic Acid," both externally and internally, in cancerous affections. In conclusion, the use of "Belladonna and Stramonium," for the removal of obstinate constipation of bowels, is pointed out.

In a communication on the "Treatment of Conjunctivitis Neonatorum," Dr. E. L. HOLMES states that he depends mainly upon the application, once or twice a day, over as much of the conjunctiva as possible, of a strong solution of argent. nitrat. gr. x–xx to an ounce of water, which is pretty bold practice.

A report is made by Dr. S. J. JONES, on "Otology." It is a sensible one, though presenting little novelty. Subjoined is a "Statistical Exposition of the Diseases of the Ear," by Dr. E. L. HOLMES. Dr. BOGART reports on the "Use of Plaster of Paris in Fractures."

We have next an instructive case of "Amputation at the Hip-Joint," by Dr. E. POWELL. The operation was performed on a young man, aged twenty-one, for chronic inflammation of the hip and knee joints. There was complete recovery from the operation. After the lapse of ten months, however, the patient died from phthisis pulmonalis.

A report was made from the Committee on "Communication from the American Medical Association, in relation to Licences." Among the other resolutions offered by the committee for adoption by the State Medical Society of Illinois is one approving of the plan of certificates of qualification being required of all persons who propose to enter upon the study of medicine. Report and resolutions accepted.

D. F. C.

ART. XXX.—*On the Wasting Diseases of Infants and Children.* By EUSTACE SMITH, M. D., Physician to His Majesty the King of the Belgians; Physician to the Northwest London Free Dispensary for Sick Children, etc. etc. etc. Second American from the second revised and enlarged English edition. 8vo. pp. 226. Philadelphia: Henry C. Lea, 1871.

A REVIEW, or even an extended notice, of this work is unnecessary, inasmuch as the first edition of it was reprinted in the *Medical News and Library*, and is consequently in the possession of the readers of this Journal. The first edition appears to have been exhausted in two years, and Dr. Smith, in preparing the second edition for the press, has not merely revised the text very carefully, corrected inaccuracies, made additions wherever an increased experience seemed to indicate that they were necessary, but has added two new chapters. In one he describes a disease which, he says, is very common among children, and is occasionally mistaken for tuberculosis. In this disease, which he calls "Mucous Disease," there is a tendency to an increased secretion of mucus from the whole internal surface of the alimentary canal, a mucous flux which interferes mechanically with digestion and absorption of food. The most characteristic symptoms of the disease are: a slimy appearance of the tongue; large quantities of free mucus in the stools; an absence of regularity in the progression of the symptoms; and a periodical occurrence of serious attacks. In addition to these symptoms, a change in the disposition of the child will be noticed. He will be observed to have become dull, to be restless at night, to start from his sleep with a loud cry, and even occasionally to rise from his bed while asleep and to walk from room to room. His appetite may continue keen, in fact it may be excessive or even capricious, the large quantities of mucus in the intestines probably preventing digestion. In speaking of the appearance

of the tongue, Dr. Smith says: "A glossy, slimy look is thus given to the organ, which is quite distinct from the moist appearance produced by saliva alone, and resembles more the aspect it would bear if brushed over with a solution of gum. This slimy look is not always general, but in slightly marked cases is limited to a spot in the centre of the dorsum, the rest of the surface and the sides having the ordinary aspect. The tongue is either perfectly clean or is covered with a thin gray coating of fur. The fungiform papillæ at the sides of the dorsum are also unusually distinct." The skin is often remarkably rough and harsh, especially about the chest, arms, and belly, in consequence of a deficiency of action; the complexion is sallow; the lymphatic glands of the neck are unusually swollen, but the temperature of the body is seldom elevated above the normal level.

Certain diseases are very apt, it is said, to leave behind them this condition of the bowel, especially scarlatina, measles, and hooping-cough; but it may arise simply from long-continued irritation, and it is hence not unfrequently seen in children who are habitually fed upon indigestible food. The treatment consists principally in the regulation of the diet—articles of food capable of undergoing fermentation, and so of increasing the irritation of the mucous membrane, are to be avoided—and in the administration of alkalies and tonics, and occasionally of aloes to carry off the accumulation of mucus.

In the other new chapter the diet of children in health and disease is very fully considered. Dr. Smith cautions us against a very prevalent error at the present time, and that is, the attempt to substitute the mother's milk by farinaceous food. This has, as is well known, a great tendency to undergo fermentation, especially in infants in whom the salivary glands are not developed, and hence to give rise to irritation. The remainder of the book bears evidence of having been carefully revised, and we regard some of the chapters, especially those on Rickets, Chronic Tuberculosis, and Chronic Pulmonary Phthisis, as of very great excellence. The author may be congratulated upon having presented to the profession the means by which the various diseases giving rise to wasting may be recognized and distinguished from one another. J. H. H.

ART. XXXI.—*Vaccination, its Protective Power in the State of West Virginia.* A Report to the Governor, November 8, 1870. By JOHN C. HUPP, M. D., State Vaccine Agent. 8vo. pp. 12.

AT the present time, when many parts of Europe are suffering from the extensive prevalence of epidemics of variola, every authentic evidence adapted to confirm the confidence of the profession and of the public in the certainty of the prophylaxis against the variolous poison afforded by effective vaccination is of importance, and as such evidence is furnished by the report of Dr. Hupp, we have felt it to be our duty to lend our aid to its diffusion.

That vaccination is preventive of smallpox, and is of itself, in all cases, perfectly harmless, is the official testimony of Dr. H. "Where," he remarks, "within the whole range of human experience, was ever an epidemic of variola, however severe, that vaccination did not promptly and effectually arrest, when it was universally and efficiently applied to the entire class or community exposed to the contagion?" The fact is very certain that "smallpox only exists among us in consequence of the neglect to apply the preventive."

"The city of Wheeling," says Dr. H., "was scourged with smallpox in the spring of 1864, so much so that the Board of Health deemed it necessary to order and direct the vaccination of *all persons* within the city, who may not have been vaccinated." In the execution of this order, Dr. H. came across "a family in the immediate neighbourhood of an infected district, in which were five unprotected individuals, one of whom had on several occasions carried articles of diet to a house in which there were those sick with smallpox, and though the food was passed to an attendant at a window, still the messenger was ex-

posed to the variolous contagion. All the five unprotected members of this family (children) were vaccinated, the matter being inserted at three or four points on the arm of each. In all, characteristic vaccine vesicles made their appearance. In the one who had been exposed to the variolous contagion, a very distinct but mild *varioloid* eruption occurred, and ran its course regularly with the vaccine disease in the arm. The patient was allowed free intercourse with the other four children. Thus showing that even after partial variolous infection, vaccination so far modified the action of the poison upon the system as to render it harmless. The immunity from infection of the other children who played in the same apartment and slept in the same bed with the one labouring under varioloid, from whom variola could have been as readily contracted by the unprotected as though he had laboured under unmodified smallpox, furnishes undoubted evidence as to the protective power of vaccination." Dr. H. states further, that he has, in repeated instances, seen a mother, whose person was thickly dotted with eruptions of incipient confluent smallpox, with her *unprotected* infant closely nestled by her side. In every such case prompt vaccination prevented an attack of even varioloid, although subsequently such children were exposedfor weeks, in the midst of "the most virulent variolous contagion." D. F. C.

ART. XXXII.—*The Treatment of Surgical Inflammations by a New Method, which greatly Shortens their Duration.* By FURNEAUX JORDAN, F.R.C.S. England, etc. etc. Royal 8vo. pp. iv., 160 (with 15 plates). London: John Churchill & Sons, 1870.

THE celebrated Dr. John Coakley Lettsom was, it is said, in the habit of signing familiar notes (and, possibly, prescription papers), J. or I. Lettsom—the letters J and I being in those days frequently substituted one for the other. Some malicious humorist, observing this habit of the learned doctor, composed the following epigram at his expense:—

"When sick folk do to me apply,
I blisters, bleeds, and sweats 'em;
If after that they choose to die,
I. LETTSOM."

Mr. Furneaux Jordan does not bleed, and seldom gives diaphoretics; but he blisters, or, more strictly speaking, counter-irritates his patients, with an energy and perseverance which has, as yet, probably never been equalled. Starting with the assumption "that the inflammatory process is one and the same process wherever it may occur, and that the best remedies for any inflammation are the best in all," Mr. Jordan proceeds to assert that, because in the treatment of some cases of inflammation, counter-irritation exercises an undoubtedly beneficial effect, therefore it must be the sovereign remedy in all. As well might it be said that because amputation may be required for gangrene of the lower extremity resulting from occlusion of the femoral artery, therefore the head should be amputated for cerebral softening following ligature of the carotid. Seriously, can it be that the author does not perceive that inflammation is modified in its course by the peculiarities of the *tissue* affected? Granted that the *process* is the same in every instance, is it not a matter of hornbook learning that the *course* and *natural history* of inflammation constantly vary, according to the multifarious modifying circumstances which exist in each particular case? Is inflammation the same (looking at it in its *therapeutical*, not *anatomical*, relations) in the old as in the young—in the hardy, healthful farmer as in the debauched and debilitated denizen of the tenement-house of a large city? Has not Mr. Jordan's hospital experience taught him that the state of the *internal viscera* exercises a most important influence on the course of external inflammation?

The author's practical proofs are as defective as his theoretical reasoning.

Take, for instance, the record of Case LXV. (p. 103): A boy comes into hospital with "all the symptoms" of hip disease. "A large abscess existed in the gluteal region. Iodine was applied for some distance around the joint, and rest secured by splintage. In a few days the abscess opened, and closed in a few days, and in four weeks all symptoms had disappeared." In another case (CXXXIII.), which is too long to quote, a young woman, worn out with suffering from a mammary abscess, was, under the care of Dr. Hodge, not only cured, but completely renovated in health, in the short space of three days, by a single application of iodine, with a pad of cotton and a flannel bandage. Truly, as Mr. Jordan himself remarks, "the records of surgery contain nothing more miraculous!"

We might point out inconsistencies in Mr. Jordan's own teaching—as that, having declared that *pressure* (which he considers next best to counter-irritation) should be used in all inflammations, he yet admits the occasional advantages of free incisions in *relieving pressure*—but to analyze and discuss in succession the contents of the whole volume would occupy more time and space than its merits demand. The reader must either take on faith all that the author asserts—and to do this would require an abandonment of almost all that is known of the principles and practice of surgery—or must look upon the work as the hasty production of an impetuous, though doubtless honest, enthusiast. Mr. Jordan, indeed, warns us in the very beginning of his volume, that the text-books and systems of surgery are all wrong, and that many remedies are used by his contemporaries because "men have not the industry to inquire into their value, or the courage to disavow them." This is now to be all changed; hereafter none but "the best remedies (counter-irritation, pressure, rest, and a few others)" are to be used in "every inflammation;" and, lest this should be called routine treatment, we are informed that, as regards counter-irritation alone, "there is endless scope for individual and independent judgment in the determination of its best localities, best degrees of intensity, best extent and configuration of area, and best modes of production." Is not this as if Procrustes had said to his prisoners, "You must, of course, be made to fit any bed, but may choose your own position on the couch, and may let head or heels hang over, as you may think proper!"

After all, we are not sure but that we are in error in treating Mr. Jordan's volume as a serious scientific production. Perhaps it is meant for a laborious practical joke. One of his illustrations certainly suggests this idea, representing, as it does (Plate XV., fig. 5), a young woman with magnificent gluteal development, in the act of being cured of uterine inflammation by means of a broad disk of iodine paint applied to those "nether cheeks," the beauties of which none but a Voiture or an Oldham could fitly celebrate. J. A., Jr.

ART. XXXIII.—*The Change of Life in Health and Disease; a Practical Treatise on the Nervous and other Affections incidental to Woman at the Decline of Life.* By EDWARD JOHN TILT, M.D., Senior Physician to the Farringdon General Dispensary and Lying-in Charity, Fellow of the Royal Medical and Chirurgical Society, and of several Foreign Societies. Third edition. 8vo. pp. 296. London: John Churchill & Sons, 1870.
The same. Philadelphia: Lindsay & Blakiston, 1871. 8vo. pp. 292.

HYSTERIA is as old as woman. From the days of Hippocrates to the present century it has ever been a perplexing study. What physician has not, at some time or other, been put to his trumps in the management of a patient whose caprices embittered her own existence, and taxed to the uttermost the forbearance of her friends? At every period of her sexual life woman is prone to these nervous perturbations, but at none are they more exacting and more intractable than at the decline.

Early in the history of medicine the source of these morbid phenomena was

traced to the reproductive organs—hence the term *hysteria*—but the remedy has thus far eluded the keenest search. Too often, in utter despair, have baffled art and jaded sympathy joined hands in resorting to the most shameless empiricism. To determine the laws which govern the ovarian *nisus*, and to intelligently meet their aberrations, have been the life-study of many earnest workers, but to no one is due a larger measure of praise than to Dr. Tilt. His classical works on the *Elements of Health* and on *Uterine and Ovarian Inflammation* have done much towards fostering a scientific precision in the treatment of female diseases.

With his usual felicity of style and thorough research, he now takes up the important subject of the change of life; and, by drawing a sharp line between the natural and morbid phenomena of this critical period, greatly simplifies the treatment of the latter.

The volume before us is divided into the three following parts: The Physiology of the Change of Life, its General Pathology, and its Special Pathology. These are still further subdivided into twelve chapters. The first of these is a valuable introduction, which embodies much information upon the object and nature of critical epochs; their curative and sanative effects; the relation of the menopause to insanity, and its influence on the mental functions. Chapter 2d treats of the physiology of the change of life; chapters 3d, 4th, and 5th, of its general pathology, therapeutics, and hygienics. Then follow several chapters under the general head of the special pathology of the change of life, which seem fairly to exhaust the subject of the diseases of the ganglionic nervous system and of the brain, such as cerebral neuralgia, pseudo-narcotism, hysteria, and epilepsy. Four chapters are devoted to the neuralgic affections of the change of life; to diseases of the reproductive organs, of the gastro-intestinal canal, and of the skin. Chapter 12th, the last in the book, takes up those miscellaneous affections which cannot be classified under one general head, such as gout, rheumatic joints and fever, cardiac hypertrophy, asthma, epistaxis, otorrhœa, etc.

In this complete manner are presented to the reader, in a systematic and available form, all the possible climacteric complications. Based upon an analysis of five hundred cases, each chapter is enriched by valuable statistical tables, which, by their condensed form, throw much light upon the physiological and pathological changes occurring at the menopause. At a glance one can see that, to rare opportunities for observation, the author has added patient investigation and thorough conscientiousness. The subject is, perhaps, wire-drawn and over-refined, but this is the tendency of one-idea men—those enthusiasts to whom science owes so much. The author, we think, also lays himself open to the charge of polypharmacy, a fault common to the English school of medicine. The accommodating British matron may perchance be coaxed into taking for months camphor and castor juleps before each meal, sipping alkaline mixtures by way of dessert, and topping off at bedtime with a jorum of golden sulphur or of the saporous Dover's powder. Playful interludes of hot toddy, and still hotter baths of several hours' duration, together with alternating plasters of opium, of the soothing belladonna, and of the more cajoling Burgundy pitch, may put her in peace with all mankind—nay, if possible, with all womankind. But where shall such a comely spirit of resignation be found in the cis-Atlantic female? Echo and our own large experience answer—where!

With this single exception, there are no flaws to pick in this most useful book, and we cordially commend it to those of our readers who, like us, have long ago worked out the conclusion that woman is fearfully and wonderfully made.

W. G.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Physiology and Histology of Adipose Tissue.*—Toldt has recently published in the transactions of the Vienna Academy (*Lancet*, Jan. 21, 1871) an essay on this subject. In opposition to the statements of Virchow, who maintains that fat-cells are to be regarded as the cells of connective tissue filled with an oily fluid, and are therefore constantly associated with this tissue, Toldt gives as the general results of his inquiries upon the intra-spinal fatty tissue that this, at least, is an organ of a peculiar nature, which neither in regard to its structure nor function can be included amongst the connective tissue formations. In order further to demonstrate that adipose tissue is independent of connective tissue, he refers to the characters and relations of fat in the batrachia. The masses of fat that surround the uro-genital apparatus of these animals in the larval state consist of large, round, transparent, nucleated cells, not separated by *any* intervening substance except bloodvessels. Passing to the mammalia, he points out that the first formation of fat in the embryo occurs around the kidneys, and thence gradually extends into the connective tissue of the mesentery after birth. He considers a strong argument in favour of the independence of the adipose tissue to be the fact that it always has, down to its smallest lobules, its own proper and closed system of bloodvessels, which, it is curious to observe, very closely resembles that of the acinous glands. These researches of Toldt enable us to explain the absence of fat in regions where everything appears to favour its formation, as in the sub-muscular connective tissue of the intestinal canal. It explains also the persistence of the tissue, with its characteristic features, even when all the oily matter has been removed by absorption. Whilst fully concurring in the general statement that fat-cells possess in mature adipose tissue a distinct membrane, he differs from Czajewicz in maintaining that when first formed they are destitute of a membrane, this only becoming visible in the later embryonal periods. The minute masses of protoplasm they contain, however, remain throughout life. He makes an interesting observation to the effect that spring frogs that have fasted through the winter, and are excessively lean, present fat drops in which no membrane is distinguishable, but which, reduced to their protoplasmic primary mass, possess the power of amœboid movements. From the consideration of these facts, M. Toldt has arrived at the conclusion that the protoplasm of the fat-cells, when supplied with sufficient nutriment, is capable, like a gland-cell, of forming fat as a kind of secretion; and, inversely, when the consumption of oxidizable material exceeds the supply, it possesses the power of using up the stored-up fat and discharging it into the blood. The mode in which fat is laid up has also been investigated by Fleischer, with a view of determining whether,

in accordance with Liebig's idea, the amylaceous compounds ingested are converted into fat directly; or whether, as Voit thinks, the fat consumed in the economy is derived from the fat of the food, and that the amylaceous compounds are only serviceable as readily combustible compounds, by means of which the fat developed from albuminous compounds, and already present in the body, are preserved. The results of his investigations on cows, which were both numerous and extended over a long period of time, were on the whole unfavourable to Voit's views.

2. *Amount of Azote in Flesh.*—This question was very fully discussed by Dr. S. SCHENK, before a session of the Vienna Academy held in 1870, as we learn from *Centralblatt f. d. Medicinischen Wissenschaften*, Oct. 1, 1870. The estimate heretofore given of the amount of azote contained in 100 grms. of recent flesh varied from 0.1 to 0.7 grms. The importance of this question in all investigations into the changes the flesh undergoes at different times and under different circumstances, induced Dr. S. to undertake a new series of investigations, in accordance with the plan of Wilb. Warrentrapp (carbonization in connection with nitrate of lime), into the relation, in respect to quantity, which azote bears to equal masses of different forms of flesh in its fresh state. In six analyses of the flesh of horned cattle there occurred a difference of from 0.14 to 0.54 per cent. of azote in the flesh from different portions of the same animal or of different animals. A similar difference was also met with in examinations of the flesh of horses, hares, and dogs, and also of that of the human subject. In the fresh flesh of the latter the largest amount of azote detected was=4.2 per cent. If, now, we agree with Voit in assuming that the medium ratio of the amount of azote introduced into the body by a diet of animal food is 3.4 per cent. by the consumption of even 1000 grms. of flesh, there would be a very large deficiency of the azote contained in the flesh of the human body, to be accounted for from that source. Dr. S. has endeavoured to ascertain the cause of the difference in the amount of azote existing in the flesh of different individuals belonging to the same species of animals. It cannot be explained, he found, by a consideration of unburned residuum in the different experiments, as this varies, in different cases, only from 1.05 to 1.13 per cent. The amount of fatty matter mixed with the flesh must be taken into account in explaining the difference in the amount of azote present, inasmuch as it was found that flesh deprived of fat gave 0.7 to 1.3 per cent. of azote, while that with the fat remaining gave 4.28 to 5.06 per cent. In the analyses made by Dr. S. of the elastic and cellular tissues of the body, he found that the tendo Achillis gave 4.9 to 5.7 per cent. of azote, and the ligamentum nuchæ 6.80 to 6.9 per cent. Hence the greater or less amount of such tissues which the flesh contains, and from which it cannot be freed, must be set down as the main cause of the varying amount (more or less) of the azote it contains. D. F. C.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

3. *Further Experiments Demonstrating that Mercury has no Special Action on the Liver.*—In the number of this Journal for July, 1869 (p. 231 *et seq.*), we gave a summary of the report of the Edinburgh Committee on the action of mercury and some other medicines on the biliary secretion. Prof. JOHN HUGHES BENNETT, chairman of that committee, states (*Brit. Med. Journ.*, Jan. 7, 1871) that their experiments were so carefully performed, so frequently repeated, so modified in every conceivable way, and so accurately recorded, that the inquiry seemed to be utterly exhausted. It was imagined, however, by some, and the point is referred to in the report, "that mercurials possess some specific power of exciting the biliary secretion by acting on the orifice of the common bile-

duct, and so stimulating the secretion through the nerves which connect it with the liver, just as pyrethrum or vinegar stimulates the salivary glands when they are applied to the orifices of the salivary ducts." It seemed to me that this idea was capable of being tested by experiment, and accordingly I devised and carried out a series of investigations, which have completely settled this matter, and of which it is the object of this communication to give an account.

Experiments to determine how far Local Stimulation of the Gall-Duct in the Duodenum increased the flow of Bile.—July 22, 1869. The different mercurial preparations employed as medicine were subjected to various processes, such as they might undergo when digested for a time in the stomach, with a view to their being applied to the orifice of the common duct in the duodenum.

It results, he says, from these experiments:—

1. That mercurial preparations digested in the stomach do not irritate the orifice of the common duct in the duodenum, or induce any flow of bile into it.

2. That no other kind of local irritation causes increased secretion or flow of bile into the duodenum.

3. That the gall-bladder is not contractile, and that, consequently, no irritation, direct or indirect, nor any kinds of reflex action, influence it.

4. That pressure upon the gall-bladder or liver, in consequence of extensive contractions of the muscles surrounding these organs, causes a copious flow of bile into the duodenum.

In consequence of the demonstration of the non-contractility of the gall-bladder made in these experiments, I carefully examined the structure of this viscus in the rabbit, dog, and man; and, contrary to what is generally supposed and taught (see Quain's *Anatomy*, seventh edition, p. 878), satisfied myself that it has no muscular coat.

The facts thus arrived at, it seems to me, completely set at rest the speculations which have been put forth as to the possible action of mercurials by local irritation of the extremity of the gall-duct in the duodenum. They further show that, whilst neither mercurials nor irritations of any kind induce a flow of bile from the duct into the bowel, neighbouring muscular contraction has that effect—a circumstance which confirms the well-known beneficial influence of exercise and muscular exertion in certain bilious disorders.

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4. *Enemata in Infants at the Breast.*—Dr. Pollak (*Wiener Med. Presse*, No. 40, 1870) has instituted a series of experiments with the view of determining, on the one hand, what amount of fluid administered by injection to infants remains in the rectum, and, on the other hand, what changes are produced upon the intestines by the amount and quality of the fluid injected.

The first inquiry is preceded by experiments made with the view of ascertaining how far up in the intestinal tube injections can be thrown. Into the intestinal canal of dead infants Dr. P. injected per anum a mucilage of starch, and tested the height to which it attained by the reaction of iodine. The amount of the fluid injected varied, in accordance with the size of the infant's body, from 2 to 4 oz. It could be detected, by the iodine test, throughout the entire extent of the large intestines, including the cæcum. By the injected starch mucilage a considerable change in the position of the bowels was produced—especially in that of the sigmoid flexure of the colon. In the empty state of the bowel the flexure lay at the rim of the pelvis near the rectum; when it became filled it reached as far up as the cæcum on its inner side, and was many times entirely covered by it. In a few cases it lay upon the inner surface of the right os ileum, forming a loop of over five inches in length by three-fourths of an inch broad. The ascending and descending portions of the arch of the colon experienced no special change of position. The cæcum assumed a sac-like distension. The middle portion of the rectum, curving normally along the hollow of the sacrum, was bulged out like a bladder, in consequence, probably, of the downward pressure of the injected fluid. The curvature to the left of the rectum at its upper portion underwent no change. No portion of the injected fluid escaped into the small intestines. When, perhaps, the injection was made with much force, and the cæcum filled to its utmost capacity, the valve of Bauhin might be forced. In

the living infant it is scarcely possible, even under such circumstances, for this to occur. In administering an injection to the live subject, Dr. P. disapproves of inserting into the rectum the nozzle (leaden) of the injection-pipe, because of the irritation it occasions. The best time to administer an injection to an infant is when it is asleep. In respect to the therapeutic properties of different enemata, Dr. P. throws no new light. It is to be regretted that under this head he has not noticed the use of cold water injections, which in the affections of infancy constitutes one of the best means we have of reducing morbidly increased temperature.—*Centralblatt f. d. Med. Wissenschaften*, No. 50, Nov. 19, 1870.

D. F. C.

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5. *Nitrous Oxide Gas as an Anæsthetic.*—The *Edinburgh Medical Journal* (January, 1871) contains an instructive paper on this subject by Dr. MACLAREN, in which he points out what advantages nitrous oxide gas possesses as an anæsthetic. Its advantages are:—

"1. Its safety. It has now been given for six years in America, and for two in this country, and a vast number of patients have been submitted to its influence, and there have been only two fatal cases recorded, both in America. In one of these the patient's lungs were found 'riddled with tubercles' when a post-mortem examination was made; and in the other, the cork, which was used as a plug to keep the mouth open, was found in the pharynx. In this respect, it compares favourably with chloroform and bichloride of methylene. 2. The absence of troublesome after-effects. It is only in very rare cases, indeed, that any complaint of sickness or faintness is made at any length of time after its use. I believe that the most prolonged inconvenience I have met with was a headache lasting the rest of the day; and patients have been always able to leave the operating chair and walk away within ten minutes of an operation. 3. The rapidity of administration. Time, often valuable time, is saved to all concerned. 4. The position. This applies principally to dentistry, where the sitting is a much more convenient position than the recumbent. 5. There is nothing unpleasant in the smell or taste of the gas itself, and it can be inspired and expired freely; it does not cause any choking feeling or spasm of the glottis.

"Its disadvantages are: 1. Rapidity of recovery from a single administration; insensibility does not last over one minute or one and a half minute. 2. It is somewhat troublesome to administer; it requires close attention and a little practice to be able to give it with facility. 3. The apparatus for making and administering it is costly. Until about six months ago, I should have had to state that a serious objection to its use was the trouble of making it, and its inconvenient bulk for carriage. But the gas can now be procured compressed into the liquid form, and thus reduced to small compass. This, however, costs in London twice the price of the home-manufactured gas, and, I am told, makes so much noise when escaping as seriously to discompose patients. I have no doubt that in a short time the gas and apparatus will be much less costly, and that it will come into very general use in minor surgery. I believe that it will be habitually given in cases in which we never use an anæsthetic now, save under very exceptional circumstances, as in using the potential cautery, opening small abscesses, and in applying painful dressings, and that it will supersede chloroform in all operations not lasting over one minute. As to the cases in which it would be unsafe to give this anæsthetic, evidently those in which phthisis exists deserve the first place, for one of the deaths recorded above was attributed to this cause, and other cases are mentioned in which hæmoptysis occurred. From the frequency of a laboured or panting condition of the breathing during the later stages of administration, I think its use is to be avoided in the case of all diseases of the lungs causing serious impairment of the breathing, as chronic bronchitis, emphysema, and pleural effusion. Acute chest diseases I do not mention, as there is but little likelihood of the question of gas administration occurring during their course. In heart disease it has been knowingly given without producing death, and with only temporary aggravation of symptoms. It has been given in such cases after the patient had

been prohibited from taking chloroform. I do not think that such cases are free from danger, and I believe it should only be given in them when the result to be attained is such as to justify some risk, as where an operation was a necessity, and its performance without an anæsthetic seemed likely to endanger the patient's existence. Leaving out of consideration insanity, I do not think that it would be advisable to give it where there was evidence of brain disease. But if there seemed an absolute necessity for unconsciousness to be produced, and the operation was a short one, I believe that the administrator, being thoroughly aware of the risk he was running, and on the watch for the first symptom of danger, could give nitrous oxide more safely than chloroform in any of the above-mentioned instances."

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6. *Experiments on the Action of Red Bordeaux Wine (Claret) on the Human Body.*—In our number for October, 1870, page 530, we noticed some experiments made by Prof. PARKES and Count C. WOLLOWICZ, with pure alcohol and brandy, on a healthy man. These experimenters have since communicated some further experiments made with claret on the same individual, and the following are their conclusions: The general results of these experiments are in all respects identical with the experiments on alcohol and brandy—that is to say, there was a marked effect on the heart, coinciding tolerably well in amount with the effect produced by pure alcohol in the former experiments; there was no unequivocal alteration of temperature in the axilla or rectum, no alteration in the elimination of nitrogen, for the increase in the last period cannot be credited to the direct effect of the wine; no alteration in the phosphoric acid of the urine; some augmentation of the free acidity of the urine; no alteration of the alvine discharges. In other words, claret wine in the above quantities cannot so far be distinguished in its effect from pure alcohol. Its most marked effect, the increase of the heart's action, must be ascribed to the alcohol, in great measure, though the ethers may play some slight part.

But it would be going too far to assert that the dietetic effects of red Bordeaux wine and of dilute alcohol are identical. The difference between them must probably be sought in their effects on primary digestion and assimilation, delicate and subtle influences which experiments like those recorded in the paper do not touch. The influence of the sugar, of the salts, and of the acidity must also be appreciated by other methods. The man himself affirmed that the wine agreed with him better than the alcohol or brandy, but the large quantity he took of these last fluids vitiates the comparison.

These experiments on wine enabled us to define somewhat better than the previous trials what might be considered moderation for this man. The 10 ounces of wine, containing about 1 fluidounce of pure alcohol, did not cause the least unpleasant feeling of heat or flushing. The 20 ounces (containing almost 2 fluidounces of alcohol) were manifestly too much. He felt hot and uncomfortable, was flushed, the face was somewhat congested, and he was a little drowsy. Moreover, as already mentioned, alcohol then began to appear in the urine. Therefore he ought certainly not to take much more than 1 fluidounce of absolute alcohol in twenty-four hours.

With regard to the propriety of this healthy man taking any alcohol, we have no hesitation in saying he would be better without it. His heart naturally acts quickly and strongly enough; alcohol increases its action too much, and might lead on to alteration in its condition, or to injury of vessels, if any degeneration were to take place in them. This man had gone through the Abyssinian campaign, and stated that when the force was without rum, owing to deficiency of transport beyond Antalo, he had in no way felt the want of the stimulant, though some of his comrades did. This seems to confirm our opinion, that alcohol for him is not a necessity, and, indeed, is not desirable.—*Proceedings of Royal Society*, No. 123, 1870.

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7. *On Hydrate of Chloral in Trismus and Tetanus.*—Dr. O. LIEBREICH, in the *Berliner Wochenschrift*, No. 43, 1870, states that while different surgeons had recently made trial of the curative value of the hydrate of chloral in cases

of trismus and chorea, without any favourable result, he has in some recent cases, by the dose of 3.5 grammes of the article, succeeded in causing an entire relaxation of the affected muscles, so that even under the application of severe pinching no spasm was re-excited. This result induced Dr. L. to make trial of the remedy as an antidote to the poisoning by strychnia, and with success. A theoretical deduction induces Dr. L. to conclude that the chloral does not act by removing the cause of tetanus, but simply by counteracting its effects, and that its use must, therefore, be persisted in so long as the muscular spasm continues to recur. Dr. L. advises the article to be administered in the form of enema, combined with a cupful of oatmeal mucilage. In emergent cases, however, he prefers its being given subcutaneously. Choosing a very pure neutral preparation, he introduces it under the skin by means of Pravaz's syringe, with its *platino-iridium* canula, which latter is so readily cleansed by raising it to a red heat. No abscesses resulted. In regard to dose, Dr. L. prefers, for the most part, small and divided doses, reserving the larger doses—2.5 to 5 grammes—when the appearance of a renewed attack of the disease is to be met, and then only once.—*Centblit. f. d. Medicinisch. Wisschftn.*, Dec. 10, 1870. D. F. C.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

8. *On the Duration of Phthisis Pulmonalis, and on Certain Conditions which Influence it.*—Dr. C. THEODORE WILLIAMS read a paper with the above title at a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, Jan. 21, 1871). The object of the paper is to give some account of a thousand cases of phthisis selected from the private practice of Dr. Williams and the author, and to deduce the amount of influence which the conditions of age, sex, family predisposition, and origin exercised on the duration of the malady. The patients belonged chiefly to the upper and middle classes. The cases have been taken from the records of those who first consulted Dr. Williams between 1842 and 1864, a period of twenty-two years; the ground of selection being that each case has been at least one year under observation.

Sex.—The author, after explaining how the cases were recorded and exhibiting certain tables, states that 625 of the 1000 were males and 375 females.

Age.—Taking the sexes collectively, 41 per cent. were attacked between twenty and thirty, 25 per cent. between thirty and forty, 19½ per cent. under twenty, and 13¾ above forty. Considerable difference was found to exist between the two sexes as to the time of attack. Between twenty and thirty, the most common period of attack for both sexes, about 7 per cent. more females were attacked than males; and again, between ten and twenty, 11¾ per cent. more. On the other hand, after thirty, the reverse was the case. Between thirty and forty, the males exceeded the females by 11½ per cent.; and above forty, by 6 per cent. The average age when attacked was, for the males, twenty-nine years and a half; for the females, twenty-six years.

Family predisposition.—This term is substituted for "hereditary predisposition," in order to include brothers and sisters and first cousins in addition to those of the preceding generation; the principle being to include as instances of disease in a family all near relations derivable from a common stock. Family predisposition was traced in 48 per cent. of the patients; in 43 per cent. of the males, and 57 per cent. of the females. In the particulars which are given it is noted that nearly half of the cases had only brothers and sisters affected.

Origin and first symptoms.—In 315 cases, phthisis originated in, or followed closely after, the following diseases, viz., pleurisy and pleuro-pneumonia (143), bronchitis (118), asthma, scrofulous abscesses, fistula, hooping-cough, croup, scarlatina, measles, continued fevers, peritonitis, malformations of the chest, and injuries: 26½ per cent. of the whole number of cases were traced to inflammatory attacks (pleurisy, pleuro-pneumonia, and bronchitis); and of these

patients, 14.2 per cent. were free from any suspicion of family predisposition. The origin of phthisis from inflammatory attacks is then dwelt on, and the symptoms indicating the conversion of pleuro-pneumonia and of bronchitis into phthisis sketched, and the more general recognition by medical men of their common occurrence among both upper and lower classes is strongly urged.

Hæmoptysis was present in 57 per cent. of the patients.

State of lungs.—In describing the condition of the lungs, Dr. Williams explains why he adopts the classification of *stages*, and what extent of disease each stage is intended to include. In none of the cases is the evidence of physical signs alone accepted; in all it is amply confirmed by clinical symptoms. Two-thirds of the patients were in the first stage at first visit, 18 per cent. in the second, and 14½ per cent. in the third; 14 cases presenting the signs of other diseases on which those of consumption shortly supervened. One hundred and ninety-eight patients are ascertained to have died; the mortality of those who came in the third stage being about double that of those who came in the first. The average duration of life among the 198 who died was seven years and eight months and three-quarters; 21 of whom lived from fifteen to twenty-eight years after the first attack. Among the 802 living patients, the average is at present eight years and two months and a quarter; 246 have lived more than ten years, 65 more than twenty, 2 more than thirty, and 1 more than forty years.

An account of the present state of these patients is then given, and it is shown that 72 per cent. have regained their health sufficiently to follow their occupations; 28 per cent. are still invalids.

Dr. Williams then discusses the views of Louis, Bayle, Laennec, Andral, Fuller, Pollock, and other authorities as to the duration of phthisis, and attributes the long duration of the present cases to—(1) the early detection of the disease; (2) the perseverance with which the patients carried out the various healing measures recommended to them, whether medicinal, hygienic, or climatic. The influences of age and sex on duration are next considered; and on these points the author's statistics show that—(1) the later the time of attack the longer was the duration, this being more marked among the males than among the females; (2) that females are, on an average, attacked four years earlier than males; and (3) that among them the duration of the disease is one year and a half shorter, and the average age reached is five years and a half less than among males.

The conclusions as to the effect of family predisposition on duration are—(1) that it does not directly limit the duration of the disease; (2) that it precipitates the onset of the disease, thus shortening the duration of life; (3) that it affects females more than males.

The influence of the inflammatory origin on the duration of phthisis is next considered, and the author concludes that cases arising from pleurisy or pleuro-pneumonia enjoy a longer duration than the average, such extension amounting to at least a year and a half or two years.

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9. *On the Relation of Tubercle to Inflammation.*—Dr. W. Moxon, Assistant Physician and Pathologist to Guy's Hospital, in his lectures on analytical pathology (*Med. Times and Gaz.*, January 21, 1871), expresses the following views on this subject:—

"If you see only small tubercles in a lung, you are content to say they are tubercles, and leave out of account the question of inflammation. They are tubercles, and you would no more care to inquire whether they are, nevertheless, inflammation, than you would care, having recognized a psoriasis, to ask whether it was an inflammation. It is a psoriasis. But, in some cases, you find that, though some tubercles are small knots of firmish consistence, you see in the same lung other patches of larger size, and others yet larger; so that from the little tubercles to the large patches there are intermediate gradations. Now, the large patches are granular, and sink in water, and are softish, breaking down easily when pressed, and exuding a yellow-looking opaque juice when so crushed down—and, in short, they have all the qualities which characterize the so-called gray and red hepatizations of the lung in acute pneumonia. Then

arises a great difficulty—for the tubercles have pneumonia in such a relation that you cannot but see that the one is the cause of the other.

"I say you have pneumonia with the tubercle; and, indeed, there is no doubt that the characters (in the cases which I am referring to) and state of the larger masses are, in all essential points, the same as those in pneumonia arising from other causes.

"Now, you cannot think the pneumonia indifferent to the tubercle; you must allow some relation between them; and these are the questions that arise—1. Does the tubercle *cause* the pneumonia, as one thing causes another and a different thing? 2. Does the tubercle *become* the pneumonia, by expansion of its area and diffusion of its influence over greater space in a less time?

"Those who hold the first view will say the tubercle has *set up* a pneumonia. Those who hold the second view will very likely, when pressed, say that the patch of pneumonic-like formation is '*really tubercle*,' a patch, not of pneumonia, but of soft 'diffuse tubercle.' Now, if these two views are allowed to conflict against each other, so that one is made to contradict the other, each makes the other absurd to its own satisfaction, and goes away overmuch satisfied with itself.

"For, if we look disinterestedly at the question, we shall see that its solution lies here—*that there is no such thing as the pneumonia or common inflammation, which is so easily assumed to be at hand* by those who would hold the first view, and say that tubercles set up that simple pneumonia. All pneumonias have their habits; there is no common pneumonia which has no special habits. There is no simple pneumonia to which other pneumonias stand in such relations that their peculiarities are additions to the characters of simple pneumonia, which simple pneumonia waits to apply itself around indifferent causes. The stock of simple pneumonia is plentiful in theory, but you do not find it in real lungs. In real lungs all pneumonias have their distinctive characters. *Every inflammation is intensely specific.* It is very much with it as with the tribe of cats. The lion and tiger are not common cats with additional lion and tiger peculiarities, any more than common cats are lions and tigers with common peculiarities. If we look over the pneumonias that occur in a year, we find that no pneumonia has the characters and distribution of the tuberculous pneumonia, except tubercles be present with it—that is, *except it be a tuberculous pneumonia.* It is quite a peculiar thing, and its characters, so far as they vary from the characters of other pneumonias, vary towards the characters of tubercles, and in any lung vary indefinitely towards those characters, so that at last you find them to be tubercles. I shall be told that Magendie and others have put mercury into the lungs, and made artificial tubercles with surrounding common inflammation. But I beg to say that I could easily have seen that these were not tubercles, and am quite willing to challenge any one to deceive me with such productions—they are only naked-eye-deceiving models of tubercles. Besides, he never made anything like the expanded formations of pneumonic phthisis, of whose graduation into tubercle I have been speaking; nor can they be made. He produced the pneumonia of mercury's irritation, which is a different-looking pneumonia, and a different pneumonia from phthisical pneumonia.

"In this discussion of the question, I have purposely avoided using the term inflammation. I have used the word pneumonia, because it will probably carry with it the signification of the produced matter due to the inflammatory change in the lung. From what I have already said on hypertrophy, you know what I should say if the question of inflammation is brought as an alternative to tubercle. I should say the question is an unmeaning question—it is not right to say a stupid question; it asks what cannot be answered, unless you mean by it—did the phenomena of pain, heat, swelling, etc., which are the true and only meaning of inflammation, accompany the tubercle? This they certainly do sometimes; perhaps always. It is affirmed, I believe correctly, that *the formation* of tubercle always goes with an augmented heat of the body, ascertainable thermometrically.

"The formation of a tubercle is as much inflammation as the formation of a herpes or a lichen, and as little; and as you get an inflamed lichen or psoriasis,

so you may get an inflamed tubercle. In the case of the cutaneous disease, you would think any one trifling with your time if he should ask whether the inflamed psoriasis is a psoriasis *plus* an inflammation; and so I think you should think of any one who asks the question in reference to tubercle. It is as much tubercle as it was before when it is inflamed; but now it is so intense that the phenomena of pain, etc., the vital reaction to excessive change, are brought out along with the vascular phenomena which evince, characterize, and, indeed, create them—which vascular phenomena are the old and present and future import of the word 'inflammation'—the subjects of the treatment directly addressed to inflammation, and the causes of such phenomena, additional to the cell-production of the tubercle, as are due to the vessel-dilatation, blood-stagnation, fluid-oozings, etc., that the vascular reaction or inflammation brings to pass.

* * * "When you ask 'What is *inflammatory formation?*' you are told it is cell-growth; and when you ask, What is tubercle? you are told it is cell-growth; and so tumour, and a lot more. The viewing of these different things with sufficient eye-power by the microscope, evinces this beyond doubt or question. The foundation of all these is one and the same thing—the production of nucleated cells, which grow when they are produced. This is common to them all, like vibrations to light and sound; yet the result of these growths is to produce here a tubercle, and here a patch of lymph, and there a tumour; and clinical experience—that is, the watching of the phenomenal results of the cell-growth—evidences the differences between them. Clinical experience, as it were, further analyzes the life of cells, as the senses analyze vibrations; but what it is that, added to the cell-growth, makes it become tubercle, or tumour, or lymph, you do not know, and never will know. It is very likely that your mind is not able to frame the question which anticipates the solution of the problem."

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10. *On the Production of Hemorrhage, Anæmia, Œdema, and Emphysema in the Lungs by Injuries to the Base of the Brain.*—Dr. Brown-Séquard contributes to the *Lancet* (Jan. 7, 1871) a very interesting paper calling attention to his recent experiments on the effect upon the lungs of injuries of the brain. "In making experiments on the comparative lethality of injuries to the left and the right side of the brain, I found, a year ago, that one of the most frequent causes of death, when it does not occur immediately or very soon after wounds of the brain, in guinea-pigs especially, was pneumonia. I was led by this fact to perform a large number of experiments to ascertain the immediate effects of an injury to the brain on the lungs. The results obtained were startling; in almost all cases of injuries by crushing or section of the pons Varolii ecchymoses were found in the lungs. Sometimes the whole lung was crowded with effused blood, and real pulmonary apoplexy existed. In some instances the effusion took place in the bronchial tubes. Injuries to other parts of the base of the brain, especially the crura cerebri and the crura cerebelli, sometimes are followed by the same effects on the lung, and it is extremely probable that a slight pressure upon the pons Varolii by effused blood is sufficient to produce it. Injuries to the medulla oblongata and to the spinal cord have but very rarely (only in three or four experiments out of a great many) caused an effusion of blood in the lungs. This is the more remarkable that, without any doubt, the nerve-fibres going from the pons Varolii to the lung, which cause the rupture of the small bloodvessels in this viscus, pass through the medulla oblongata and the cervical part of the spinal cord. Many experiments have shown me that it is not through the par vagum, but through the sympathetic nerve, especially by its spinal roots, which throw themselves in the first thoracic ganglion, that the peculiar influence of the irritated pons Varolii exerts itself in producing a pulmonary hemorrhage.

"A hemorrhage is not the only immediate effect that can be observed after an irritation of the base of the brain by crushing or cutting; an anæmic condition, œdema, and emphysema can also be produced. Some small parts of the lungs are found perfectly white, and, according to the examination of a distinguished micrographer, M. Ranvier, who has kindly helped me in some of these researches, ab-

solutely deprived of blood, no doubt through a spasm of the bloodvessels having emptied them of their contents. This may occur after injuries of almost all the parts of the base of the brain, but especially the pons Varolii. Not so as regards œdema, which principally appears after an injury to the medulla oblongata. Looking at a lung in which such an alteration exists, one observes one or several grayish spots, generally circular, and of the size of the head of a pin, protruding as a part of a sphere from the surface of the lung. This pearl-like part of the lung, according to my able friend, M. Ranvier, contains a good deal of serum, and its minute bloodvessels are filled with the white corpuscles of blood, and free from red corpuscles. This is, indeed, a most wonderful fact, and the more so that this change in the contents of the pulmonary capillaries is immediate.

"The last effect I intend to mention of an injury to the base of the brain on the lungs is already known to experimenters, I mean emphysema. But what I will state about it is a new and very remarkable fact, which does not agree with the reigning theories of the mode of production of emphysema. It is that this morbid condition can appear when not a single respiratory movement takes place, after an irritation of the base of the brain either by crushing or cutting.

"When I publish the details of my experiments on the influence of injuries to the brain on the lungs, I will show that, in man, diseases of or injuries to the brain very frequently produce organic alterations in the lungs. I will content myself here, to prove the frequency of that morbid influence of the brain on the pulmonary organs, to state that, out of 188 cases of organic diseases of the brain recorded by Calmeil, there was a morbid state of the lungs, especially inflammation, in more than sixty cases—*i. e.*, in one case out of three. I have no doubt that many patients attacked with brain diseases die from a disease of the lungs caused by that of the central organ of the nervous system."

11. *Pathology of Fatal Hæmoptysis in Advanced Phthisis.*—Dr. R. D. POWELL brought before the Pathological Society of London (Nov. 15, 1870) a series of specimens and a table of fifteen cases which had occurred at the Brompton Hospital, illustrating the pathology of fatal hæmoptysis in advanced phthisis. Specimen one consisted of the lung of a man, aged 25, who had died, while under Dr. Powell's care, from exhaustion, three days after his first attack of hæmoptysis. Both lungs were the seat of lobular pneumonic consolidations in all stages of degeneration, and in the right lung there were some old smooth-walled cavities, the largest of which, situated at the base, contained a sacculated aneurism, as large as a small walnut, of a secondary branch of the pulmonary artery. The aneurism had thin, brittle walls, contained few coagular lamina, and had ruptured by a small opening. Specimen two showed a small sacculated aneurism situated in the wall of an old indurated quiescent cavity, which had given rise to abruptly fatal hæmoptysis, in a patient of Dr. Symes Thompson, at the Brompton Hospital. This patient had been ill for several years, but had never had hæmoptysis before. Specimen three had been removed from a patient under Dr. Powell's care, who had died suddenly of hæmoptysis on October 12, 1870, having had previous attacks of copious hæmoptysis in January and September. This specimen showed a large thin-walled cavity, the surface of which was in a state of active ulceration, which had led to extensive exposure of large vessels, and erosion of their walls. From one of these branches of the pulmonary artery the hemorrhage had occurred; and on the same vessel, a little higher up, a small aneurism was situated, partially obstructing a bronchus. Specimen four was removed from a patient of Dr. Pollock's, who had died from rapid tubercular phthisis, but had never had any important hæmoptysis. This specimen, like the preceding, showed a large cavity in a state of active ulceration, leading to extensive exposure and erosion of vessels. It illustrated the long-continuing patency of large vessels in the walls of cavities, and the formation of fibrinous coagula in them, attached to the side first exposed, and invaded by the ulceration, and the subsequent removal by the same process of the vessel-wall, leaving the coagulum bare while the vessel still remained patent. Of the fifteen cases of fatal hæmoptysis in

the table (including three of the above cases), twelve had resulted from rupture of the pulmonary artery in a cavity, preceded in eleven by dilatation (five sacculated, six varicose), and in one case from ulcerative erosion. In three cases the source could not be discovered. Dr. Powell regarded old-standing unilateral cases of phthisis with quiescent cavities as most favourable for the formation of aneurisms or ectasias of branches of the pulmonary artery; cavities in a state of active ulceration are most liable to cause fatal hemorrhage by erosion of the vessel. In both these cases the artery was invaded on one side only, the other being still in connection with living tissue. When a vessel was surrounded by pneumonic consolidations it was more likely to become obliterated. Dr. Powell referred to a paper by Dr. Rasmussen, in which eight cases of fatal hæmoptysis were related—four from sacculated aneurisms, and four from dilatation of pulmonary branches.—Dr. C. T. Williams had seen the vessels sometimes dilated and thin-walled—sometimes almost calcareous. Was there any change in the vessels in early consolidation?—Dr. Bastian thought it was not difficult to account for fibroid change in the coats of the vessels. In the brain this was generally so. With an old cavity and chronic induration, he could understand the vessels partaking of the change, and dilating or giving way where there was no support.—Dr. Moxon had failed entirely in discovering the source of hemorrhage in two suddenly fatal cases. One was a girl who died in five minutes; yet he could find consolidation merely. It was a matter of surprise that Dr. Powell's cases should be of the kind they were, as in such it was usual for the vessels to contract. He would rather expect to find such change in rapidly fatal cases.—In reply to Mr. Arnott, Dr. Moxon said he had pursued his search for the source of the hemorrhage systematically till the lung was reduced to exceedingly small pieces.—*British Med. Journal*, Nov. 15, 1870.

12. *Vesicular Emphysema of the Lungs.*—Dr. O. Bayer (*Arch. d. Heilk.*, xi. 1870) verifies the statement of Wagner and Villemin, that the earliest histological change to be observed in cases of pulmonary emphysema is an increase of the interstitial granules (stroma). In the majority of cases he admits, however, this increase is only apparent, inasmuch as in the walls of the most developed cellules there will, in some cases, come into the focus of the lens an unexpected increase in the number of granules. In many chronic cases of emphysema increase of granules is unquestionably one of the antecedents of the attack. Nevertheless, Dr. B. considers the anomalous formation of granules to be not so much a cause as a result of disease of the vesicular ectasia. The cause of the enervation of the lungs—which, as in other organs, is not always preceded by any apparent histological change—Dr. B. considers it to be the result of the disturbance of the pulmonary circulation. It can, also, be caused by continued distension of the cellules of the lungs, by the presence of capillary bronchitis, by disease of the neighbouring portion of the lung, by a disturbance of nutrition, generally, by dilatation and loss of elasticity of the pulmonary artery, by atheroma of the aorta, and terminal branches of the bronchial arteries. The more intense the disturbance—circulatory and nutritive—the more readily will mechanical influences become causes of vesicular pulmonary emphysema.

D. F. C.

13. *Bronchial Asthma—Bronchial Spasm in Children.*—Dr. L. M. Politzer, from the study of five cases of a peculiar spasmodic affection of the lungs which he has met with during the few past years, feels authorized to pronounce it a disease appertaining especially to the age of childhood. He describes it to be an essential, idiopathic affection of the muscles of the bronchi, and of the nerves which regulate their movements; as a consequence, it may be, of bronchial catarrh. The following are its diagnostic phenomena. The most intense dyspnœa, enduring for eight to ten or twenty hours; such as we observe in the latter stage of croup, pneumonia, pleurisy, bronchitis of the larger and smaller bronchial ramifications, pulmonary œdema, etc. Sudden occurrence of such dyspnœa, without increase or rather with diminished temperature of the surface; or if a catarrh with fever had preceded the asthma, upon the occurrence and during the continuance of the intense asthmatic dysp-

nœa, the fever ceases; an unusually loud, fine, whistling respiratory sound is to be detected upon auscultation, with a diminution or entire absence of respiratory râles; even though they had previously been present during the continuance of a preceding bronchitis, they disappear during the attacks of dyspnœa, or are concealed, at least, by a whistling sound. There is but slight cough, mostly laryngeal. It increases in strength during the intervals of the bronchial spasm, so long as there remains an accompanying pulmonary catarrh. The spasm and dyspnœa, disappear suddenly, after continuing for a period of eight, ten, twenty, or twenty-four hours; appearing again, somewhat later, for the most part without any change of character. From croup, with which bronchial asthma has a close resemblance, it is to be distinguished by the loud whistling respiration often combined with fine crepitant râles, continuing unchanged throughout the entire attack, while in croup the paroxysms of intense dyspnœa occur at intervals. We are also to take into account the early occurrence of the deoxygenation of the blood, and the non-febrile character of the asthma. In regard to the therapeutic management of bronchial asthma, Dr. P. recommends quinia in large doses, musk, and especially the chloro-bromate, from the use of which he states that he has seen great advantage ensue in nervous diseases generally.—*Centralblatt f. d. Medicinischen Wissenschaften*, Oct. 15, 1870, from *Jahrb. f. Kinderheilk.*, N. F., III., 1870. D. F. C.

14. *Ulceration of the Frœnum Linguæ in Pertussis.*—Dr. WM. MACCALL, of Manchester, records (*Glasgow Med. Journ.*, February, 1871) the results of his investigations in regard to the occurrence of a peculiar ulceration on or near the frœnum of the tongue in children suffering from pertussis. This characteristic ulceration was noticed in Germany as early as 1844 by Amelung, Braun, Bruck, Zitterland, Liersch, and Schmidt, and ten years later by Gamborini, in Italy; but has not been much noticed in Great Britain or in this country. Dr. Maccall, in an epidemic of pertussis in Manchester in 1869–70, found this ulceration in 44 per cent. of the children who were brought to the Dispensary of the Children's Hospital. This proportion he thinks too small, as a number of the cases in which the ulceration was absent were examined only in the first week, and it may have occurred at a later period. Gamborini found it in 56 per cent.

The period of the disease at which this affection appears varies much, but the most usual time seems to be about the second week. It may, however, occur very early; for example, Dr. M. found it in one case where the cough was only of two days' duration, in two cases of four days', and in three cases of five days'. In these and some others it was present before any hooping had been observed—the cough being, however, distinctly paroxysmal. On the other hand, among the cases in which it did not exist at the first visit, but became manifest subsequently, he found the date of commencement to be in two cases as late as three weeks, in two cases four weeks, and in two cases five weeks. When once formed, the ulcer generally continues till the disease begins to decline and lose its paroxysmal character, and then heals spontaneously. If the duration of the pertussis be protracted, the ulceration may thus continue for a long time, and without as a rule increasing much in size. In several cases it was found fully three months, and in one case six months after the beginning of the disease.

Dr. M. regards this ulceration as not a specific eruption, but to be due to a mechanical cause. "In most children suffering from pertussis, the tongue is protruded from the mouth, and the frœnum becomes stretched and rubbed in a slightly sawing manner upon the lower incisors during the succession of rapid, violent, expiratory efforts, with occasional imperfect inspirations, and the final *reprise*, which constitute the paroxysm. By the frequent repetition of this action, abrasion or vesication and then ulceration are produced.

"This idea of the causation is supported by other facts observed, which tend to show that the phenomenon is in some way connected with the presence of the teeth. Thus, it is very rarely—in my own experience *never*—found in children before the appearance of the teeth, although pertussis affects them as characteristically and often as severely before the period of dentition as after

it. On the other hand, it may be present at the earliest age after the appearance of the teeth, several of the children in whom I found it being from eight to nine months, and two of them only seven months old. And further, if present at all in older children who have lost the lower central incisors, it is not on the frænum, but on some part of the tongue corresponding with the prominence of a particular tooth or teeth."

Dr. M. considers this ulceration to be important as a diagnostic sign in doubtful cases, its presence giving certainty to what would otherwise be only a probability.

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15. *Angina Pectoris.*—Dr. F. W. Moinet discusses (*Edinburgh Medical Journal*, January, 1871) the pathology of this disease, and expresses the belief that it is a paralysis occurring in and depending on a weakened heart, as no other theory can account for the symptoms and history of the disease.

He recommends the following treatment:—

"During the paroxysm the treatment most efficacious in relieving the symptoms is that by diffusible stimulants and opium, hot brandy-and-water, sinapisms to the feet, and placing the hands in hot water. In the functional cases, treatment must be directed mainly to the stomach and nervous system. Tonics, such as iron and quinia, and regular exercise, will be found most beneficial. Trousseau in his work mentions some good results he obtained by galvanism; but from the reports of the cases operated upon, they must have been functional, as it is only in these cases that cures can be effected. Still, we are inclined to think that galvanism carefully, and at first gently, applied, might be of some service even in organic angina, by giving tone and stimulus to the heart's muscular fibre, and that, at least, it is worthy of a trial. Another remedy we would suggest is bleeding, for by relieving the languid and stagnating circulation, you ease the heart, and at the same time give it a stimulus and opportunity to recover itself, especially when the paroxysm is a protracted one. Nitrite of amyl is also sometimes found useful; it acts as a stimulant—its speedy action being due to its being administered by inhalation—and not by relieving tension, as Dr. Brunton affirms in his paper in the *Lancet* of 5th March, in which he relates a case of angina pectoris in a man, æt. 26, and argues that the arterial expansion is diminished, and the tension correspondingly increased during a paroxysm of angina, the smallness of the pulse being due to its hardness, and that by the nitrite of amyl the expansive movement is increased by relieving the muscular walls of the arteries; but in angina the pulse is not hard, there being no tension, only relaxation of the arterial coats, and the amyl by exciting the heart to increased work by its stimulating properties, the blood is thrown into the vessels with increased rapidity, so the arterial expansion is increased, but not by diminishing tension, the arteries being put to their full power of expansion, but not beyond it.

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16. *Impairment or Loss of Power of Speech.*—Dr. J. S. Bristowe read a paper before the West Kent Medico-Chirurgical Society, entitled Cases illustrative of the various forms of Impairment or Loss of the Power of Speech, with remarks. He divided the mechanism of speech into two parts: that furnished by the larynx, and that furnished by the mouth. He then proceeded to consider aphasia under three heads. 1. That due to a mental defect independent of any affection of the organs of speech, to which the term amnesia, or amnestic aphasia, has been applied. Particulars of four cases illustrative of this form were given, in all of which there was paralysis of the right side; in other words, the left side of the cerebrum was diseased, which to a certain extent confirmed the views of Dax and P. Broca. These writers associate aphasia with disease of a definite part of the cerebrum, viz., the posterior part of the third frontal convolution. Dr. Bristowe thought it certain, however, as Trousseau maintained, that aphasia in some instances is obviously the result of disease of the right hemisphere, and that it was equally certain that the dependence of aphasia on disease of a particular convolution, whether in the right or left side, was at present very far from certain. 2. That form in which, without there being any apparent mental defect, and without there

being any paralysis of the organs of speech, the patient loses the power of speech absolutely. Particulars of a very interesting case illustrative of this form were given, in which Dr. Bristowe succeeded in teaching the patient to speak. A full account of this case is published in the last volume of the *Transactions of the Clinical Society*. Dr. Bristowe thought that cases of this kind lead to the conclusion that speech, when once acquired, is a purely reflex phenomenon, as are the acts of deglutition or respiration; that there is some ganglionic centre intermediate between the cerebrum (which thinks and wills) and the nuclei of the motor root of the fifth, the portio dura, and the hypoglossal nerve (whence the motor power of the organs of articulation is derived), intimately connected by nerve-fibres with all these parts; that this centre, when the mind wills to express itself in words, acts as its agent in the matter, and directs the necessary combined impulses of the nerve-nuclei, upon which the combined movements essential for the production of each articulate sound and each articulate word depend; and that aphasia here is due to disease affecting this co-ordinating centre. 3. That in which the nerves of speech are paralyzed, either from disease in some of the trunks, or from disease affecting their nuclei of origin. Particulars of one case illustrative of this form were given. The most remarkable examples are those furnished by disease of the medulla oblongata, and by that peculiar form of paralysis described by Duchenne and Trousseau, and which the latter terms glosso-pharyngeal paralysis. Dr. Bristowe also stated that cases of aphasia are certainly met with in which the above varieties of loss of speech are combined in a greater or less degree.—*Brit. Med. Journal*, Feb. 4, 1871.

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17. *Addison's Disease.*—Dr. SILVER exhibited to the Pathological Society of London (Nov. 15, 1870) the supra-renal capsules of a man, aged 24, who had died of Addison's disease. The man came under his care at Charing-Cross Hospital, in June, and he afterwards became an in-patient. He had been growing dusky for two years; previously to that he had been fair. The cause was rendered obscure by an attack of ague two years before. He was very weak, complained of inability to take a deep breath, and had palpitation. Some time before death, he showed cerebral symptoms. He died in the night. After death the vessels of the brain were found to be loaded, the ventricles containing more fluid than ordinary, and the corpora striata softened. The lungs were tolerably healthy, the left apex slightly adherent, and both containing masses of obsolete tubercle. The spleen was normal. The supra-renal capsules were adherent, and completely converted into a calcareous mass on each side. Dr. Silver considered that the case tended to show the connection between Addison's disease and tuberculosis. He also alluded to two similar cases which he had encountered in visiting country hospitals.—*British Med. Journal*, Dec. 3, 1870.

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18. *Addison's Disease and Sclerodermia.*—Dr. J. M. ROSSBACH, Würtzburg, in an interesting paper in *Virchow's Archiv* (September, 1870), discusses the theories which have been advanced to account for the symptoms of Addison's disease. At first the disease of the supra-renal capsules was considered the primary affection, but certain facts were soon found to be opposed to this. Thus all the symptoms of Addison's disease have been observed in cases where no lesion of the supra-renals was discovered after death; while the capsules have been found diseased, without the symptoms of Addison's disease having existed during life. Then, also, careful examination has shown that the capsules do not possess a special nervous apparatus; and, lastly, excision of them in animals does not produce the symptoms of Addison's disease. The next theory was that the cause of the symptoms was an affection of the sympathetic nervous system, but such an idea has no basis in the known functions of the sympathetic, and, moreover, the semilunar ganglion has been extirpated in animals without the production of the symptoms of Addison's disease. In support of a theory of his own, the author then brings forward certain facts. In the great majority of reported cases there was some psychical disturbance, such as loss of intelligence, loss of memory, great irritability, &c. Addison

himself, in his summary of the symptoms, notes a peculiar change of the mental action as a constant symptom. Along with this there were present in numerous cases symptoms also belonging to the central nervous system, such as paralysis, epilepsy, &c. In all cases, also, great anæmia was a prominent sign, and this occurring long before the peculiar set of symptoms usual in later stages. Again, the causes of the disease point in a large number of cases to disturbance of the mind, as by grief, &c. The pigmentation of the skin is not so important a sign as is usually supposed—it may be absent in Addison's disease; at the same time certain facts connect sudden pigmentation of the skin with disturbance of the mind. Having brought forward these facts, the author then goes on to draw an analogy between Addison's disease and hysteria. Both present prominent nervous symptoms, while in the one case the uterus is very commonly coincidently affected, and in the other case the supra-renal capsules. The author concludes that Addison's disease is really a neurosis—that is to say, a functional disease of the entire nervous symptoms, which is not as yet anatomically recognizable, and which stands in close but not necessary relation to disease of the supra-renal capsules; the disease is characterized by psychical disturbance, extreme anæmia, extraordinary sickness, and very frequently by abnormal pigmentation of the skin. By this definition he would take Addison's disease out of its present isolated position, and group it along with hysteria, as "diffused neurosis with unknown anatomical basis."—*Glasgow Med. Journ.*, February, 1871.

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19. *Temporary Glycosuria as a Sequel of Cholera.*—Mr. William Sedgwick, at a late meeting of the Royal Medical and Chirurgical Society, remarked that the first and albuminous urine passed or withdrawn after the usually prolonged suppression of the secretion was usually deficient in urea, and free from sugar; and that the subsequent temporary glycosuria was preceded by the occurrence of a blue colouring matter. Sugar in the urine occurred not, as a rule, in the first urine secreted after suppression, but subsequently to the occurrence of albumen; and whilst there was a relative deficiency of urea when albumen was present, sugar was associated with urea in excess. The production of the blue colouring matter in the urine of patients suffering from cholera was very closely associated with the development of glycosuria; the occurrence of the sugar in the urine in such cases appearing to be a somewhat later stage in a series of pathological changes, apparently traceable to one common origin. Attention was directed to the frequent occurrence of a blue colouring matter in the urine in many other diseases, which, like cholera, could be more or less directly referred to the alimentary canal; and, as sugar has been found in the same cases, those two abnormally increased, if not altogether abnormal, constituents of the urine were perhaps derived from the same source. In reviewing the pathology of the urine in cholera, the chief facts to which attention should be directed, with reference to the occurrence of glycosuria, were—the suppression of the urinary secretion as a primary result of the disease, with arrested formation of urea; albuminuria, with deficiency of urea; the presence of a blue colouring principle; and, finally, diuresis, with excess of urea and sugar in place of albumen. The presence of sugar during convalescence, when albumen was no longer present, suggested that the temporary glycosuria of cholera might be due rather to the progress of reparation than of destruction, and that it was, as it were, the result of an excess of restorative effort. In diabetic patients, during fever, or during the last agony, sugar in the urine was apt to be replaced by albumen. Temporary glycosuria, like the previous suppression of urine, had no claim to be regarded as an exceptional phenomenon characteristic of cholera; on the contrary, it occurred during convalescence from other forms of acute disease, in which it was often associated with the previous development of a blue colouring principle. It also occurred apart from disease, as a physiological condition during certain stages of development, and at certain epochs of life; and it could be experimentally produced. In all such experiments, the primary effect produced must be on the vascular system, to which the branches of the sympathetic nerve were distributed, and any effect produced on other parts of the organism must be secondary. The fact observed

by Eckhardt, in 1867, of the absence of sugar from the urine after section of the splanchnic nerves, taken in conjunction with the fact observed by Monreau in 1868, that section of those nerves was followed by an intestinal flux possessing the same character as the flux of cholera, indicated very clearly the direction in which the inquiry should be pursued. For, when the neuro-paralytic condition of the digestive canal so produced was compared with what occurred after the influence of the central portion of the sympathetic nervous system had been artificially increased by the application of galvanism or electricity to the part during life, as shown in MM. Linati and Caggiati's experiments, it would be found that the results then obtained were essentially opposed to those which followed arrest or diminution of that influence, either from section of the nerves or from cholera. The temporary glycosuria observed in all the various cases cited might be regarded as a consequence of long-continued and immoderate secretion, consequent on a previous diminution or arrest of the influence of the sympathetic or vaso-motory nervous system, which acted as the moderator of secretion in virtue of its action as controller of the circulation. The author had been led to infer that all secretion was associated with saccharine transformation; and that whilst, on the one hand, an excess of secretion was accompanied by a corresponding excess in the formation of sugar and consequent glycosuria, a moderate exercise of secretory function was, on the other hand, accompanied by a corresponding moderate formation of sugar, which could be disposed of in the system; and that it was only when the blood contained sugar in excess from such causes as those which had been already referred to that some of it was eliminated by the kidneys. Consequently, in those cases of cholera which terminate favourably, and in which glycosuria had been observed to occur during convalescence, the subsequent disappearance of sugar from the urine might be accepted as evidence in favour of the normal balance of organic function having been satisfactorily restored.—*Brit. Med. Journ.*, Dec. 24, 1870.

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20. *Diagnosis by Examination of Urine in Obscure Forms of Urinary Disease.*—SIR HENRY THOMPSON calls attention (*Brit. Med. Journ.*, January 7, 1871) to a mode of obtaining a diagnosis in some rare and doubtful cases of disease of the urinary organs, when all other modes have failed. Thus, for example, we not seldom meet with a patient whose urine, usually containing a small or varying quantity of blood and pus, presents more or less albumen, but relative to the precise origin of which it is desirable to be certain. Some of the deposit produced is of course due to the admixture named; and while he may be right in believing the quantity to be equal only to the blood and pus in the urine, we cannot be certain whether some of it may not be due to renal changes. In such a case, the other signs, and the symptoms also, are often insufficient to enable us to say whether they are due solely to vesical disease or to pyelitis, or whether there may be some renal affection, not to say constitutional albuminuria, complicating the conditions named. On the other hand, the symptoms may apparently indicate only an affection of the bladder; there may be no symptom of disease involving any higher portion of the urinary tract; nevertheless, the experiment to be described may prove the kidneys to be almost solely the seat of the malady. Few cases present more of obscurity than some of those with the characters thus briefly indicated.

The proceeding may be described as follows. A No. 6 or 7 flexible catheter is introduced into the bladder while the patient is in the upright position, and the urine drawn off is placed in a vessel apart. By means of an elastic gum-bottle containing a few ounces of warm water, the bladder is washed out two or three times, with about an ounce or two at a time, until the outflowing fluid is perceived to be quite clear. The catheter being left *in situ*, fresh urine from the kidney, untainted by any admixture, will now pass by drops into a test-tube placed to receive it; as a specimen, therefore, of true renal secretion, unqualified by vesical products, will be furnished in about five minutes, sufficing for a chemical analysis, and useful, to a certain extent, for microscopical observation. By this simple process I have been enabled to solve the question of disease of the kidneys in some cases in which hitherto doubt as to their implication ex-

isted; and have often had the satisfaction of demonstrating that the secretion obtained direct from the organs was absolutely free from any sign of disease, where they had previously been suspected to be the seat of grave mischief. But there is one source of fallacy on applying this test which is occasionally to be met with. An illustration of it exists at this moment in the case of a man now in my ward at University College Hospital. If the bladder easily bleed with instrumental contact, as occasionally happens, the process may produce a slight admixture of blood in the urine so obtained, barely enough to tint it, but sufficient, perhaps, to occasion a considerable deposit to heat and nitric acid. It should never be forgotten, in estimating these products, that, for equal quantities of blood and pus, the former produces a much more bulky deposit of albumen than the latter. Of course, then, this disposition to slight bleeding, as a result of the procedure, and any augmentation of albumen so caused, is, of itself strong evidence of vesical, rather than of renal disease. I should say, that the occurrence just named is one of rare occurrence.

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21. *Diagnosis of Rickets.*—Dr. C. Currie Ritchie remarks, in a paper entitled "Clinical Observations on Rickets" (*Med. Times and Gaz.*, Jan. 7, 1871), that, being at a loss as to the diagnosis between rickets and tuberculosis, he was led to observe the morning and evening temperatures of eleven children for eight days. These were all cases of uncomplicated rickets, and were taken by the same thermometer, the bulb of which was retained in the rectum for five minutes at each observation. The ages of the children ranged between ten months and three years, and the morning temperatures were all taken after breakfast, between 9 and 10 A. M., and the evening temperatures all between 9 and 10 P. M. The respirations and pulses were not taken, as they are subject to so many variations in children, and, besides, they seem to bear no definite relation to normal temperature. The mean result of the eighty-eight morning observations thus obtained was 99.13° Fahr., and of the eighty-eight evening observations 97.44° Fahr.

On comparing these results with the average results of the normal temperature of children by Roger and Finlayson, we find that the morning temperature is lower in rickets by 0.54° (after adding to his axillary temperature 0.7°, the difference between rectal and axillary temperature) according to the former, and by 0.28° according to the latter observer. We also find that, as in the normal, there is a varying fall in the evening temperature in rickets—a most important diagnostic from tuberculosis, in which, as has been shown by Ringer and others, there is not only no evening fall, but there is a positive evening rise. This may be either higher, relatively, than the morning temperature, which may be nearly normal, or both may be high, with evening exacerbations, or both may be high, with exacerbations not confined to any one portion of the day.

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22. *Intestinal Worms.*—Huber advocates the doctrine which ascribes, in part at least, the disturbance to health resulting from the presence of worms (*ascarides lumbricoides*) in the intestinal canal, which was formerly and is still by many physicians believed to be the result solely of their mechanical action, to an acrid effluvium emanating from the body of the parasite. He found, after an hour spent in the examination of some dozen worms, that he became attacked with a most troublesome itching of his head and neck, followed by the appearance by a well-developed eruption in patches, the smallest of which were on the forehead. The right ear became greatly swollen, and a considerable discharge took place from the external meatus, lasting for an hour. From the ear there extended, over the right side of the head, a troublesome sense of beating; there was a catarrhal condition of the conjunctiva of the eye, with intense itching—chemosis of the right eye. After a few hours these symptoms disappeared. A similar observation is reported by Miram. There is probably required a considerable accumulation of worms in the bowels to give rise to symptoms of like severity, Huber does not refer, with Kuchenmeister, the source of this acrid principle in intestinal worms to their vesicular muscular termina, but to their subcutaneous tissue. He denies that the

acrid emanation is supplied in greater amount in the female than in the male. According to Leuckart, insects taken in with the food are the media by which the larvæ of worms are introduced into the intestines, and Huber remarks that by no article of food used by man, especially during childhood, are so many insects taken into the stomach, as by butter.—*Deutsches Archiv für Klin. Med.*, VII., 1870. D. F. C.

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23. *Rhinosclerma.*—A case of this affection is described by HEBRA in the *Wiener Med. Wochenschr.*, 1870, No. 35. He had previously reported 10 cases, all of which were essentially alike, in their development and progress. In the case just refered to, the disease commenced by a thickening of the integuments of the under part of the nose and the upper portion of the upper lip. The thickened parts were hard to the touch, and the skin covering them assumed a brownish-red colour. The patient experienced a sensation of diminution in the opening of the nares. There was no pain. The progress of the disease was very slow, the original type of the induration remaining unchanged. There was no formation of purulent or ichorous matter. The different portions of the tegumentary induration grew in size somewhat independent of each other, giving to the intumescence a kind of knobbed appearance. If one portion be treated with caustic potash, it will be destroyed, but the immediately surrounding portions, even though they may be involved in the inflammation resulting from the use of the caustic, remain after the subsidence of the inflammation unchanged. Hence the complete destruction of the indurated part requires many repetitions of the caustic. In one of his early cases, Hebra removed the knobs with the knife. The excised portions exhibited, under the microscope, increase of, with thickening of the cellular tissue.—*Centralblatt f. d. Medicin. Wissenschaften*, Oct. 8, 1870. D. F. C.

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24. *Eczema Marginatum.*—In the *Wiener Med. Wochenschrift* (1870, Nos. 44, 45), Dr. ISID. NEUMANN treats of this form of cutaneous disease. Hebra gave the name eczema marginatum to an affection which makes its appearance on the genitals, about the anus, on the inner surface of the thighs, and the surface of the abdomen, often in the axilla, in the form of circular patches, of a brownish-red colour. These patches spread from their circumference outwards, while they heal at the centre. According to Köbner the disease is due to a germ similar in its nature to that which gives rise to *herpes tonsurans*. Bärensprung and Burchardt describe a cutaneous affection running a very similar course with the one under consideration, as an *erythrasma*. In the course of a discussion that for many years has been going on between Hebra, Köbner, Neumann, and Peck, Hebra became finally convinced that the *eczema marginatum* might probably owe its origin to a cryptogamic germ, though, at the same time, he could admit that the fact of the germ being the cause, and not a consequence merely, of the disease was not established with certainty, but at the same time denying positively that there is any evidence of the supposed identity of the disease named by him *eczema marginatum* and *herpes tonsurans*. Dr. Neumann examines the several points embraced in this controversy by what he believes to be the legitimate results of his own observations, and arrives at the following conclusions:—

I. In cases of inflammation of the skin with destruction of *epithelium* (*intertrigo*), there may be developed cryptogamic germs as in ordinary eczema, by the presence of which the case becomes converted into one of eczema marginatum.

II. An existing germ disease, such as in herpes tonsurans or pityriasis versicolor, when favoured by its particular locality on the surface, may assume the form of eczema marginatum.

III. In the earlier stages of eczema marginatum germs are almost always to be detected. In inveterate cases they are usually absent.

IV. The germ element observed in cases of eczema marginatum may by effort at culture become changed into the penicilium glaucum or trichothecium. —*Centralblatt f. d. Med. Wissenschaften*, 1870, No. 46, Oct. 22. D. F. C.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

25. *Treatment of Suppurating Glands in the Neck, by frequently repeated Tappings.*—Every practitioner is aware that very unsightly cicatrices are often left after the healing of suppurating glands of the neck, and, when the patient is a female, that the greatest mortification is often experienced from them.

Mr. Lawson Tait, of Birmingham, states (*British Medical Journal*, Feb. 4, 1871) "that this objectionable condition may be avoided in very many cases by the careful perseverance in a plan of treatment which he has now adopted for some years with most satisfactory results. It consists simply in tapping a gland as soon as I have determined that it contains pus, and in continuing this treatment until the cavity no longer secretes. The means by which I effect this, is the little instrument known as Dr. Alexander Wood's morphia-syringe, and which I used for this and other similar purposes long before I had ever heard of the recently devised aspirators. Only two precautions are necessary; and these are, never to introduce the needle twice at the same spot, and to introduce it very obliquely into the abscess, entering it at least half an inch from the margin of the tumour. As a rule, the direction must be from behind forwards, but occasionally it may be done from before backwards; and it almost always may be effected from above downwards, or from below upwards. The number of punctures sometimes required may stagger some who read this; but I have had to persevere till I have made as many as fifty punctures, at intervals of from one to ten days, before the treatment was successful, the success being constituted by the complete disappearance of the tumour, without the skin ever breaking. The amount of satisfaction which the patients have expressed at being saved the disfigurement of a gland-mark, I have often found to be ample repayment for the great amount of trouble. Cases of the successful issue of this treatment I could cite in great numbers, and my failures have not been many."

26. *Treatment of Snake-bites.*—Dr. J. Fayrer, who has tried more experiments with snake-poison than any other person, and had large experience in the treatment of snake-bites, and withal is perfectly reliable, has published (*Indian Annals of Med. Science*, Dec. 1870) an extremely interesting article on this subject.

"Snake-poison," he says, "produces fatal or deleterious effects, either by completely paralyzing the nerve-centres, and thus causing rapid dissolution, or by partially paralyzing them, and poisoning the blood, thereby inducing pathological conditions of a secondary nature, which may, according to circumstances, cause the slightest or most dangerous symptoms.

"The effect produced depends on two sets of conditions: first, the species of the snake: its actual state at the time, the quantity and quality of its poison, and the circumstances under which it inflicts the bite; second, the species, size, and vigour of the living creature, and the circumstances under which it is bitten.

"Snake-poison is essentially a neurotic, or nerve-force paralyzer, and when it takes full effect, it kills by annihilating, in some unknown way, the source of nerve-force.

"But it is also an irritant, for, if applied to a mucous membrane, or to the conjunctiva, it causes violent inflammation; absorption at the same time takes place, and the symptoms of poisoning are produced.

"It is also, to a certain extent, a septic, for if the bitten creature survive, the wound and the parts about it are apt to slough, and to induce septicæmia. The poison acts by absorption, that is, by entering the circulation, and so reaching the nerve-centres; it produces, according to the quantity or intensity of the venom, either death, or severe local and constitutional symptoms. If it find entry by a large vein, such as the femoral or jugular, life may be destroyed in a few seconds.

"The blood itself is affected by the poison. I have not been able to detect any corpuscular changes, such as those described by Professor Halford, nor have I any exact information on the chemical changes it undergoes or may have undergone; but that it is altered, there can be no doubt; and in poisoning of the lower animals, at all events by the viperidæ, its coagulability after death is generally destroyed, whilst after death by poisoning by the colubrine snakes, the blood generally coagulates.

"As the blood is the channel through which the poison acts, it is obvious that the first object should be to arrest, destroy, or prevent its entry into the circulation, or, if it have already entered, to neutralize or counteract its action, or to procure its elimination by the agency of the natural depurating organs and their secretions, and to treat local, consecutive, and constitutional symptoms by such remedial measures as may be required by the patient's condition. Absorption takes place with extreme rapidity; so fast, indeed, that it was formerly supposed, in the case of some of the more active poisons, that they acted by transmission of a shock through the nervous system; and so far as we know at present, it is not improbable that such, in some instances, may be the case. But rapid as the effect of snake-bite sometimes is, there is no reason to believe that it operates on the nerve-centres through any other channel than that of the vascular system.

"The experiments of Blake, Hering, and later, of Claude Bernard, show that absorption takes place with such rapidity as to explain the most rapid deaths from such cause. Blake (vide *Guy's Forensic Medicine*, 3d edition, page 388) found that a poison passed from the jugular vein to the lungs of a dog in from four to six seconds, from the jugular vein to the coronary arteries of the heart in seven seconds; a poison injected into the jugular vein was distributed throughout the circulation in nine seconds. Claude Bernard found that a saturated solution of sulphuretted hydrogen introduced into the jugular vein of a dog began to be eliminated from the lungs in three seconds, and when injected into the femoral vein of the same dog in six seconds.

"I have neither seen nor heard of any case of snake-poisoning, in man or the lower animals, so rapid—though in some I have observed the first symptoms in a few seconds—as to justify the conclusion that poisoning had occurred otherwise than through the medium of the circulation.

"Such being the rapidity of the absorption and action of the poison, it is obvious that if the means, whatever they may be, of destroying or arresting its entry, be not applied immediately, but little benefit can be expected from them. If more than a few seconds have elapsed, we can only hope, by these measures, to prevent the entry of so much of the poison as may be diffused in the areolar tissue surrounding the bitten spot.

"As the chief hope of safety lies in preventing the entry of any poison at all into the circulation, the earlier appropriate measures are resorted to the better is their chance of success."

The following is a summary of the treatment he advises:—

"Apply, at once, a ligature, or ligatures, at intervals of a few inches, as tight as you can possibly tie them; and the one nearest to the wound tighten, by twisting with a stick or other such agent. Scarify the wound, and let it bleed freely. Apply either a hot iron, or live coal, or explode some gunpowder over the part; or apply either carbolic or some mineral acid or caustic. Let the patient suck the wound whilst you are getting the cautery ready, or if any one else will run the risk, let him do it.

"If it be a positive bite on a toe or finger, especially if the snake have been recognized as a deadly one, either completely excise, or amputate immediately at the next joint. If the bite be on another part, where a ligature cannot be applied, or indeed if it be on the limbs above the toes or fingers, cut the part out at once, completely.

"Let the patient be quiet. Do not fatigue him by exertion. When, or even before symptoms of poisoning make their appearance, give eau-de-luce, or liq. or carbonate of ammoniæ, or even better than these, hot spirits and water. There is no occasion to intoxicate the person, but give it freely, and at frequent intervals.

"If he become low, apply sinapisms and hot bottles, galvanism or electro-magnetism over the heart and diaphragm. Cold douches may also be useful.

"The antidotes, in addition, may be used by those who have faith in them; but, as I have said, I fear there is no reason to believe that they are of any use. Encourage and cheer the patient as much as possible. As to local effects, if there be great pain, anodynes may be applied or administered, and antiseptic poultices to remove sloughs; collections of matter must be opened.

"Other symptoms to be treated on general surgical principles.

"This, I believe, is the sum and substance of what we can do in snake-bite. If the person be not thoroughly poisoned, we may help him to recover. If he be badly bitten by one of the more deadly snakes, we can do no more."

With regard to the plan suggested by Dr. Halford, of Melbourne, of injecting ammonia into the veins, Dr. F. says it "does seem more rational than most suggestions that have been made, and I regret exceedingly that in my own experiments it has proved of no avail. The reason may, indeed, be in the greater virulence of the Indian Thanatophidia, and this may be the explanation of my failure, where Dr. Halford has found success. But, after all, the more venomous snake is the most crucial test. I would say the same in reference to the similar use of the liq. potass. by Dr. Shortt, in Madras. He, I believe, does not attach the same amount of importance to it as Dr. Halford does to the ammonia. In my researches, both have been equally powerless, and I confess that I have felt much disappointed that experience has not confirmed the benefit of what certainly were rational suggestions by authorities to whom science is deeply indebted for much valuable information and most earnest investigation on an important subject."

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27. *Treatment of Blood-poisoning by a Carbolized Atmosphere acting through the Skin and Lungs.*—Mr. John Wood, Professor of Surgery in King's College, London, states (*Practitioner*, January, 1871) that for some time back he has used at King's College Hospital, in some cases of pyæmic poisoning, and also as a prophylactic agent after operations, the vapour of carbolic acid evolved constantly under and retained by the bed-coverings. The vapour thus remains sufficiently long in contact with the surface of the patient's body for absorption to take place into the system, as in a vapour bath or fumigation.

"By such means we avoid, on the one hand, the local irritation and the retarding action of the acid upon the granulations of the wound or sore, which we leave free for the application of any other stimulating agent that may be deemed advisable, and for the regular and effective cleansing, which is so powerful an aid to healthy action. We also, on the other hand, leave the stomach free from the disordering effect which the agent may and does undoubtedly cause, and more available for the administration of other stimulating and antiseptic medicines, such as chlorine, which possess greater affinities for and are more conformable to the animal structures.

"For the purpose indicated, I employ the powder known as Macdougall's disinfecting powder. This is placed in small muslin bags to a considerable extent pervious to the dust, and wholly so to the vapour which is emitted. These are suspended from the ribs of the cradle, which is almost universally used to keep off the weight of the bedclothes or to swing the limb, in surgical cases. Where these are not used, the small bags placed on the bed near and around the wound are quite as effective. I have never yet found in any case the presence of the dust to be complained of as irritating to the skin of the patient, and I have used them, as the subjoined cases will show, with the best results in severe cases of traumatic erysipelas. I also employ the powder, freely spread under and around the bed, in all putrefying and infectious cases, and the floors are washed with a solution of the common carbolic acid, so as to pervade the atmosphere very sensibly.

"As regards the effect upon the wound itself, it seems to do all that is ordinarily necessary to keep the parts totally free from putrescence or smell of an offensive kind, when large sloughs are not actually present, and the wound very putrescent. When such are present, I have usually used, in addition, the car-

bolic oil, of the strength of one part in six or eight, as a direct application, so as to saturate the sloughing part. In doing so, care is taken to avoid contact of the oil with the surrounding skin or with healthy granulations, upon which it has invariably the effect of retarding development and cicatrization. The perfect freedom of the beds, even in the worst cases, from smell and offensiveness is very remarkable, and this alone cannot but be beneficial to the patient's condition, and adds to his power of resisting septic influences."

He relates two cases of very severe erysipelas, and one of pyæmic poison, successfully treated by this method.

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28. *Carbolic Acid in a Vapourized Form in Wounds, Ulcers, &c.*—According to a report contained in the *Würtemb. Med. Corresp.*, 132, 1870, No. 20, an abstract of which is given in the *Centralblatt f. d. Medicin. Wissenschaften*, 1870, No. 44, Dr. EHRLE, having found that the application of certain important remedial agents to the surface of wounds, ulcers, &c., in the manner usually pursued, was productive of so much pain, that it was not possible to continue their use sufficiently long to derive from them the advantages they were adapted to afford, the idea suggested itself to him, of employing the carbolic acid in cases of wounded and denuded surfaces, in a vaporized condition; that is, in the form of a spray; and after some years' experience, he speaks favourably of its use in this manner. He employs a flask, terminating above in two elongated openings, of different diameters. Through the one having the larger diameter a solution of carbolic acid is introduced; through the opening with the smaller diameter a tight fitting capillary tube, reaching to nearly the bottom of the flask. Now, by blowing with the mouth into the larger of the two openings, the solution of carbolic acid is forced through the tube in the smaller opening, upon the spot desired, in the form of a fine spray. The following cases are adduced in illustration of this plan of treatment.

A female, sixty-five years old, had a medullary carcinoma of her arm, of the size nearly of a child's head, in a state of ulceration. Extirpation was not advisable, in consequence as well of the rapid growth of the swelling as of the extreme cachectic condition of the patient. The surface of the tumour exhibited a rapid destruction of its enveloping tissues, a very foul smell, and was so painful that the application of charpie, wet with pure water, could not be endured. One to three scruples of carbolic acid to one ounce of water being applied in the form of spray, the rapidity of the process of ulceration was speedily arrested, and the foul smell corrected.

A woman in whom a ligature was applied, for the removal of a fibrous tumour of the os uteri, of the size of a goose-egg, some days after the operation became affected with a fetid discharge per vaginam, and sharp sticking pains in the region of the uterus. From the mouth of the uterus a number of shreds projected, of so friable a texture, that they could not be drawn forth by a forceps. The vaginal aspect of the cervix uteri was swollen and the os corroded. The carbolic spray was applied twice daily, and all the unfavourable symptoms ceased speedily. D. F. C.

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29. *Perchloride of Iron and Manganese in Necrosis, Fistulous Sinuses, and Hydrocele.*—Prof. MARCACCI states (*Revista Scientifica di Siena*) that "1. Perchloride of iron and manganese, injected into fistulous sinuses, destroys the pyogenic membrane, modifies the state of the walls, and favours cicatrization. 2. In necrosis, it acts on the confines of the living bone, stimulating its vessels; so that the detachment and separation of the dead bone are facilitated by the formation of new vessels in the living. 3. In hydrocele, it soón modifies the inner surface of the tunica vaginalis, which becomes filled with plastic exudation, attended with more or less inflammation, according to the quantity and strength of the injection used. 4. It is not necessary that the tunica vaginalis should be distended by the injection; it is sufficient that the liquid be brought into contact with all parts of the membrane. 5. Very little pain is produced by the contact of the solution, but it is not the less efficacious. 6. A weak solution is sufficient, which should be kept in two minutes. 7. In seven cases

of hydrocele in which the injection was used, hard œdema followed, but was not a serious complication.—*L'Imparziale*, January 16, 1871.

30. *Urethral Fever; Death from Fibrinous Concretions in the Right Side of the Heart.*—Dr. J. Fayrer records (*The Indian Annals of Med. Science*, December, 1870) a very interesting and instructive case of this. A man in the prime of life, in good health, with the exception of a slight stricture, which was only troublesome when irritated into spasm by such irregularities as that of taking a little more beer than usual; a steady, intelligent, and otherwise temperate person, suffered from retention of urine, due to a slight excess a day or two previously. He applied for relief at the hospital, and is relieved at once by the passage of a No. 8 catheter. He returned home, feels chilly, had rigors, and this rapidly followed by fever and delirium; he passes urine tinged with blood after his return home. The fever was attended with intense restlessness and distress, severe pain in the right hypochondriac region and pit of the stomach follows. Rapid, deep, and gasping breathing, with the greatest præcordial distress, increased, and getting worse and worse, until the patient dies in great agony of breathlessness at about midnight, or forty hours after the catheter was passed. His intellect was perfect to the last; urine was secreted and voided not long before death. It is clear, therefore, that the symptoms were neither due to uræmic nor cholæmic poisoning, nor to any cerebral disorder.

There was nothing to point to cholera or other exhaustive disease as the cause of death. Air entered the chest freely, and his voice was natural to the last; he did not die of asphyxia. The sounds of the heart were normal; heart disease was not present. There was evidence of neither peritonitis nor other acute inflammation. What then was the cause of death?

The post-mortem examination revealed a congested state of the base of each lung, with consolidation of a small portion and a patch of broken-down tissue about the size of a pea. The pleuræ were healthy, and the pericardium contained a small quantity of fluid. Neither of these conditions was sufficient to cause death. The abdominal viscera, it is true, were not absolutely healthy, for the liver was slightly enlarged, and the kidneys were congested and in an incipient state of degeneration. The bladder, prostate, and tissues about its neck were generally healthy. The bladder was somewhat thickened, in consequence of a slight stricture situated just in front of the bulb of the urethra. Through this an instrument had been passed. There was nothing in the abdomen to account for death. The patient's state up to the moment of his death, and the fact that urine had been secreted and voided very shortly before death, prove that neither uræmia nor cerebral mischief was the cause of death. The state of the bowels and secretions equally demonstrated that it was not due to cholera; but, on opening the heart, it was evident that the diagnosis was correct, that the formation of fibrinous coagula in the heart had destroyed life. The coagula were firm, decolorized, and adherent, and on the right side not only obstructed the auricular, ventricular, and arterial openings, but extended far into the branches of the pulmonary arteries, ramifying like the branches of a tree.

Dr. F. says he has "repeatedly noticed this condition as a cause of death in surgical cases, but I have never seen one more striking or more uncomplicated than this, and it is another illustration of a pathological law of great interest. I have before expressed my suspicions that malaria has much to say in inducing the condition of blood in which this fibrinous coagulation occurs as a result of some disturbance of the innervation by a surgical operation; in this case, the simple one of passing a catheter through a slightly strictured urethra was the exciting cause. The patient cannot be said to have been, strictly speaking, in a healthy condition, though he appeared in perfect health, and no lesion was discovered that would account for death, although sufficient existed to suggest how, with the addition of the shock of the operation, and the consequent urethral fever, the fatal blood change and consequent cardiac apnœa were brought about."

* * * "In such a case as the preceding, and in many others where fatal cardiac apnœa has supervened suddenly from fibrous coagulation, obstructing the pulmonary circulation after surgical operations, when the patient appeared to be doing well; it is difficult to comprehend, and, as I think, and have frequently suggested, is a subject of great surgical importance, though one, that as a cause of death, has not attracted the attention it merits."

31. *Triple Obturator Herniæ.*—Dr. JOHN CHIENE records (*Ed. Med. Journ.*, January, 1871) a remarkable case of this, which he met with in the dissecting-rooms of the Edinburgh University. A portion of the ileum was strangulated in the opening at the upper part of the left obturator foramen; and there were two small obturator herniæ on the right side—one an anterior sac formed of parietal peritoneum, with an opening in front of the round ligament, and a posterior sac similar to that on the left side, which contained the outer half of the right Fallopian tube.

32. *Amputation at the Hip-joint.*—Dr. FAYRER, in the *Indian Medical Gazette* for January, 1871, gives an abstract of eight cases in which this operation was performed by him. (Three of these have been previously published in his *Clinical Surgery in India*, and one in the *Medical Times and Gazette* for 1868.) Of these eight cases, three were reamputations after amputation at the thigh; in all the system was affected more or less by toxæmia; one recovered. Four were immediate, so far as the operation in the treatment of the disease was concerned. In one, a case of gunshot wound, the patient had all but recovered from the operation, when he was carried off by tetanus. One was a case of secondary amputation after a gunshot wound, when the constitution had become much affected; being young (about twenty-one years), and otherwise healthy, it gave the patient a chance, but he died in a few hours after the operation, of pulmonary embolism.

The results were:—

One recovery.

One death from tetanus after a month.

One death from osteo-myelitis and pyæmia on the fifth day.

One death from pyæmia, cancerous deposits, and pulmonary embolism on the thirteenth day.

One death from pyæmia and pulmonary embolism on the second day.

One death from shock a few hours after operation.

One death on sixth day from exhaustion.

One death in a few hours from exhaustion and pulmonary embolism.

33. *Treatment of the Wound caused by Amputation.*—Dr. SCHAPIRA (*Wiener Med. Presse*, 1870, No. 32) speaks very decidedly against the too early closing of the wound produced in amputating, to which he ascribes the occurrence of severe wound-fever, the result of pyæmia. He urges strongly the free administration of opium.—*Centralblatt f. d. Medicinischen Wissenschaften*, Oct. 8, 1870. D. F. C.

34. *Tinfoil as a Dressing to Wounds.*—Dr. FLORSCHUTZ states (*Med. C. Zeit.*, Jan. 4, 1871) that he lately had under his care numerous wounded German soldiers who reached the hospital after six days' journey. At first he used the common dressings, but soon gave the preference to tinfoil. The latter is placed in an imbricated manner on the wound, and over the foil some charpie where the suppuration is abundant, and a simple compress where it is not. The dressings were changed twice in the twenty-four hours at first, but only once when the patients improved. The author prefers the tinfoil to lead-leaf, which has been recommended, and has found that the most severe gunshot wounds did well with the tinfoil, which latter is very cheap and easily procurable.—*Lancet*, Jan. 14, 1871.

35. *Excision of the Ankle-joint.*—Dr. WATSON exhibited to the Medico-Chirurgical Society of Edinburgh (Dec. 7, 1870) a patient on whom he had ten

months before performed this operation, and showed the parts removed, consisting of the astragalus and the ends of the tibia and fibula. The foot was healed some time since, and the patient had been moving about in the country. He could bear his whole weight on the affected limb, and walked smartly and readily.—*Edinburgh Med. Journ.*, January, 1871.

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36. *Plastic Operation on the Urethra.*—Sir Henry Thompson exhibited to the Clinical Society (*Lancet*, Dec. 17, 1870) a patient on whom an operation had been successfully performed for the loss of a large portion of the urethra. The man had been the subject of large extravasation of urine, distending the scrotum and rising above the pubes, whence it was evacuated by free incisions. The resulting sloughing destroyed the skin of the penis and a full inch of the urethra just anterior to the scrotum. When the neighbouring parts were sound, Sir Henry, having introduced a grooved staff into the bladder, opened the urethra in the perineum, and passed a gum-elastic catheter through the wound into the bladder, and retained it permanently. He then broadly pared the margin of the wound, dissected a large flap from the side of the scrotum, and placed it in good apposition upon the raw surfaces, attaching it with silk sutures, and covering in completely the urethral wound. All the urine now flowed by catheter into a vessel, and in a few days firm union had taken place, except at one small spot. The catheter was changed in a fortnight, and the second one was retained for five weeks. On removing this, the perineal wound speedily closed, and a No. 8 catheter could be passed through the entire urethra into the bladder. The patient has since learned to do this for himself. There now remained only a very small orifice, which could be readily closed by galvanic wire, or by some small plastic operation. Sir Henry dwelt upon the importance of a constant free evacuation of the urine in these cases, so as to bring about a state of quietude to the diseased passages; and for this purpose he was in the habit of insisting upon the patient acquiring for himself the habit of drawing off his water by catheter. The great bar to success, he thought, had almost invariably been the presence of urine, percolating, at every act of micturition, between the fresh surfaces newly adjusted by the surgeon. The procedure adopted in the present case had been adopted on two occasions in France, by Sègalas and Ricord.

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37. *Large Calculus removed from Female Bladder.*—Dr. Watson exhibited to the Medico-Chirurgical Society of Edinburgh, December 7, 1870, a calculus of large size, removed from the bladder of an elderly female patient who had suffered from the affection for some years, and had been during that period under the care of two eminent physicians, who had exhausted all medicinal means for the relief of her urinary symptoms. The calculus consisted of oxalate of lime encrusted with lithic acid and phosphates. The calculus was removed by means of rapid dilatation of the urethra by means of a Weiss urethra dilator, and extracted by means of forceps. The interesting feature of this case was that, after such considerable dilatation, the patient was able to retain her urine within twenty-four hours of the operation. The calculus weighed 1120 grains.

Dr. Matthews Duncan exhibited at the same time a large calculus, of a pear shape, two inches long, and very nearly as broad, which he had removed from the bladder of a lady who had suffered long from it. He operated by rapid immediate forcible dilatation of the urethra, subsequently extracting by the forceps. The patient was doing well. The calculus weighed 800 grains.—*Edinburgh Med. Journ.*, January, 1871.

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38. *Lipoma of unusual size in an Infant.*—Dr. Setina describes in the *Wiener Med. Presse*, No. 32, 1870, a case of lipoma occurring in a young infant, two months old, in the neighbourhood of the loins. It steadily increased in bulk, until it attained the size of a large man's fist. The nutrition of the infant's body was not impaired. Operation; recovery. After its extraction, the tumour weighed eleven ounces.—*Centralblatt f. d. Medicinischen Wissenschaften*, 1870, No. 44. D. F. C.

39. *New Method of Dividing the Pedicle in Ovariotomy.*—It must be admitted that it is extremely desirable to restore the stump of the pedicle in ovariotomy at once into the abdomen, if it can be accomplished without a greater risk than attends its fixture to the wound. The obstacle to this replacement is the peril of hemorrhage, and the injurious effects of returning tissue tending to decompose.

Dr. Geo. H. B. MACLEOD, Regius Professor of Surgery in the University of Glasgow, in an interesting article (*Lancet*, Jan. 28th, 1871), points out the objections to ligating the pedicle, to the use of the clamp, the écraseur, the cautery, and the separate ligature of the vessels, and proposes a new plan, which he conceives will obviate the chief objections against the methods at present in use.

This plan consists in twisting off the stump of the pedicle. To effect this, the pedicle is to be firmly grasped near its uterine end with forceps, the blades of which are narrow, and, being male and female, will take a firm hold, and which are to be retained in apposition by a quadrant with a screw. The cyst is next cut away by dividing with a knife the extreme distal end of the pedicle, and the stump is caught at a short distance from the part grasped by the first forceps by another forceps having broad, fenestrated blades, with straight ends, and having quadrant and screw to maintain a firm hold. By slowly turning this second forceps, while the first is kept at rest, the stump is twisted off close to the edge of the instrument by which it is held. "Hardly any tissue," Dr. M. says, "remains external to the fixing blades, and the amount of injury done is most trivial. Possibly it would be better to incise the peritoneal covering of the pedicle before applying these instruments. The stump may now be returned with safety into the cavity of the abdomen, and the closure of the wound can be at once accomplished."

Dr. M. has tried this plan in but one case, but in that it was strikingly successful, and he is sanguine it will be adaptable to a majority of cases. He admits, however, that short, thick pedicles—and these, it is scarcely necessary for us to remark, are certainly the ones which are most difficult to manage—may possibly not be amenable to this plan.

Dr. G. D. Beebe, of Chicago, reports in the present No. of this Journal (p. 353), several cases of ovariotomy in which he resorted to twisting the vessels separately with the best results. Whether this plan or that of Dr. Macleod is preferable can best be determined by experience, but the former, it would seem to us, might have the advantage in cases of very short thick pedicle, where the latter might not be available.

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40. *Tendency of Sponges to excite Suppuration in Wounds.*—The *Glasgow Medical Journal* for February last contains an interesting paper on this subject by Mr. D. C. MCVAIL. He remarks that "to every wound which the surgeon makes, and to almost every one which he is called upon to dress after injury, he is nearly certain to apply a *sponge*—which, indeed, is deemed an essential accessory to every operating-case. Now, a perfectly new sponge—supposing it to have been thoroughly freed from sand—leaves in the wound minute portions of its own horny texture; and, if it has been used once or twice, it deposits, in addition, fragments of disintegrating cells, which it has sucked up at a former application. Any one who may question this will have all doubt set aside if he will but draw a wet sponge across a clean glass slide, and examine it under the microscope; he will then see fragments of the skeleton of the sponge, and small portions of broken cells, besides particles of whatever may have been floating as dust in the atmosphere of the room in which the sponge has been kept. And, once contaminated, a sponge can never be again thoroughly cleaned, for always, in addition to parts of its own structure, it leaves small portions of other matters on whatever surface it may be applied. I am quite certain that a little careful examination will render clear to the minds of all the truth of what I have here stated.

"It is, of course, by no means impossible that these small organic fragments of sponge substance, &c., may be entirely absorbed and carried away from the surface of the sore; but the chances are that, ere this happens, less or more

irritation, resulting in inflammation and suppuration, will be set up; and it is to this, I believe, that suppuration occurring in wounds where no ligatures have been used is mainly due; and, doubtless, not a little of the suppuration which the advocates of acupressure and torsion have laid to the charge of ligatures, is likewise owing to the same cause. Indeed, it was an instance of this very kind which first led me to question the propriety of applying sponges to wounded surfaces. The case was one of excision of the mamma; bleeding was stayed by torsion, and the wound healed from end to end by first intention. Four days afterwards an abscess opened through the wound, and a very large quantity of matter escaped, after which the opening again rapidly healed, and everything went on well. Here, as there were no ligatures, the suppuration—if due to organic matter at all—must have been caused by organic atoms from the air, or organic matter from the sponge; and the examination of the sponge in the manner above described satisfied me that it had left in the wound an immense number of small organic particles.

"This being so, it becomes a question—are or are not sponges indispensable in dealing with wounds? The service done by them is of a twofold nature; they clean the wound, and so allow the surgeon to see exactly what he is doing, and they arrest hemorrhage from the capillaries and smaller arteries by the reflex action which their mere contact with the surface excites. Beyond this they serve no other purpose. Now, it must be self-evident to any one who is acquainted with the efficacy of cold in arresting hemorrhage that a piece of ice will much more certainly cause the wounded capillaries and arteries to contract, and the cleansing of the wound is more thoroughly accomplished by a jet of water from a wash-bottle than by being swabbed with a sponge.

"In a case of excision of the breast, occurring shortly after the one already mentioned, instead of a sponge a piece of ice somewhat larger than an orange was employed, and momentary contact with this arrested bleeding from all the vessels, with only one exception, which was controlled by torsion. There was no secondary hemorrhage, and the wound healed throughout by first intention, and from beginning to end there was not one drop of pus, except from the track of a harelip-needle, which had been used in bringing together the cutaneous edges, and which, unfortunately, had been pushed through before it was discovered that it had a broken point, and consequently it had made a small lacerated track for itself, and from this, after the fourth day, about one single drop of matter, more like serum than pus, exuded when dressed for three or four mornings. With this exception, there was not a drop of discharge from any part of the wound from the day of operation until the patient was discharged cured."

OPHTHALMOLOGY.

41. *Strychnia in Amaurosis.*—Prof. Nagle, of Tübingen, has communicated an interesting paper, in the *Centralblatt* for December 24, on "Strychnia as a Remedial Agent in Amaurosis." After referring to the various trials which have been made of it and nux vomica in England and Germany during the last half century, he observes that the remedy had gained from these a very doubtful reputation, the instances of recovery being regarded, for the most part, as inexplicable matters of curiosity. His own experience, carried on for some years, has yielded much better results, having convinced him that strychnia is a most valuable remedy in amaurosis, and, applied in the right way, at the right place, is productive of very favourable, and sometimes of very surprising, results. So peculiar is its influence on this disturbance of vision, that its more exact study may be expected to elucidate the general theory of strychnia-poisoning, and it is thus invested with more than a mere ophthalmological interest.

Professor Nagle has already made a communication on the subject to the Wurtemburg Medical Society, but he is also desirous to bring it under the

more general notice of the profession. He gives a few selected examples. Thus, a boy, 3 years of age, the subject of measles, awoke out of prolonged and deep sopor, blind of both eyes. Only a trace of a sense of light and pupillary reaction remained, while to the ophthalmoscope all seemed normal, no signs of *neuritis optici* being present. The blindness had lasted several weeks, some visual power only having slowly returned. Rapid and complete recovery was produced by strychnia—the consequence of each injection, consisting in a considerable increase in visual power, being perceptible at the end of half an hour. For effecting complete recovery, only four injections were required, one-ninth of a grain of strychnia being the whole quantity employed. In another case, of a lad, aged 15, two subcutaneous injections effectually cured a partial unilateral amaurosis, scarcely one-fourteenth of a grain being employed, the effect commencing in a few minutes, and reaching its maximum in less than an hour. In cases of slight amblyopia, with paresis of the retina, arising from various causes, good effects are produced in from fifteen to thirty minutes. After commencing, or even tolerably far advanced atrophic degeneration of the optic papilla, as shown by pale and superficial excavation, strychnia is often of avail—a fact of which no example has hitherto been recorded. It is obvious that in many of these cases, hitherto regarded as incurable, we must rest content with imperfect results, satisfied if able to prevent complete blindness. The earlier the strychnia is resorted to, the better will be the results. In some desperate cases, not only has the progress of the disease been arrested, but considerable improvement has been effected, this being sometimes only temporary, and at others durable. In a case in which the amaurosis manifested all the character of rapidly progressive malignity, the diseased process was brought to an almost sudden stand-still, a portion of visual power remaining stationary. For more than five years after the use of strychnia, the patient has continued able to walk about, and can decipher print, in spite of a shining white papilla. In some cases of intense whitening of the papilla, a decided improvement in the appearance of this has been observed, in consequence of a partial reproduction of the capillary redness. It is of physiological interest to note that, in excessive amblyopia due to long disuse, and in which the outer half of the retina has undergone great decay, the strychnia exerts great effect. An eye which could only count the fingers at a few feet distance, was, fourteen days later, able to decipher fine (Jäger No. 3) print. In traumatic amaurosis its effect has several times proved striking. At the present time, Dr. Nagle has a remarkable case of this kind in his clinic, in which some hypodermic injections produced, in a few days, useful visual power, although the optic nerve exhibited decided anæmia and pallidity. The present war is only too fertile in traumatic amaurosis. Grazing shots and contusions of all kinds may induce paralysis of the retina, either in a simple form, or complicated with various lesions; and it is to be hoped that in these cases, which yield with such difficulty to other means, the curative effects of strychnia will be essayed.

From the experience he has had in the employment of this substance, Professor Nagle feels himself entitled to say something in the matter of prognosis. The most complete results are to be looked for in cases of so-called pure *anæsthesia retinæ*. Most cases of essential amaurosis, in which too great physical changes in the optic nerve have not occurred, are suitable for its employment; symptomatic cerebral and spinal amaurosis are so only within narrow limits; while toxical and traumatic amblyopia and amaurosis are especially adapted for its use. In marked degeneration of the connective tissue of the optic nerve, the remedy should not be employed, as its character would only be compromised. Nothing is to be expected from it in *neuritis optici intraoculars* and its consequences; and cerebral irritation and tabes are contraindications of its employment.—*Med. Times and Gaz.*, January 21, 1871.

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42. *Albuminuric Retinitis.*—Dr. D. ARGYLL ROBERTSON has published (*Ed. Med. Journal*, January, 1871) some interesting observations on this disease. The following is a summary of the chief points of interest in his paper:—

"1. That dimness of vision is a frequent concomitant of chronic Bright's disease; and that, while in a few cases the defective sight may be attributable

to uræmic poisoning of the nervous system, in the great majority of cases it is due to inflammation of the retina, attended with fatty degeneration.

"2. That this disease of the retina presents such distinctive ophthalmoscopic appearances as enable it to be at once with certainty recognized.

"3. That this retinal affection is found most frequently to accompany the contracting form of Bright's disease, but occasionally, also, the amyloid variety.

"4. That not unfrequently, from the insidious progress of the disease, the affection of vision is the first symptom that obliges the patient to apply for advice, and that thus the ophthalmoscope may lead to the detection of previously overlooked kidney disease; and,

"5. That, in a few cases, the diseased condition of the retina has been resolved, with restoration of function."

43. *Presumed Injury to the Ciliary Nerves from a Blow.*—Mr. R. B. Carter read before the Clinical Society of London the particulars of a case of this, and exhibited the patient, a little boy aged 7, who had received a blow from a bat upon the right eye eight months previously. Enormous dilatation of the pupil followed the injury. The ophthalmoscope showed that the choroidal pigment around the optic nerve entrance (which formed a well-defined ring in the uninjured eye) had been scattered by the shock, and that an annulus of choroid around the nerve, and reaching nearly to the yellow spot, was undergoing atrophic changes. The inference was that the coats of the eyeball in this region had been strained and injured by *contre-coup*, and that the ciliary nerves had participated in the injury at their entrance into the globe. The dilatation of the pupil was greater than paralysis of the filaments from the third nerve would explain, and seemed to suggest active irritation of the sympathetic filaments of the dilator. There was no impairment of vision, and no paralysis of the external ocular muscles.—*British Med. Journ.*, Dec. 10, 1870.

44. *On the Causes of Failure in the Operation for Squint.*—Mr. Spencer Watson read, before the Medical Society of London, a paper on this subject, based upon an analysis of 103 cases of convergent and 25 cases of divergent squint. The causes of failure Mr. Watson classified under the following heads: 1. The pathological conditions were misapprehended. It had been thought to be due to mechanical obstruction to the movement of the muscles or to bands of fascia; but this was an error. In two-thirds of his cases hypermetropia was one of the conditions present; at the same time retinal changes had some influence in determining the permanent character of the squint. 2. The operation failed when improperly used. When there is eccentric fixation from any cause, an apparent squint is seen, and in such cases an operation gives rise to diplopia, and would not benefit, unless the other eye was much impaired in its visual power; or, again, squint may be apparent in cases in which one eye is very much larger than the other, from the presence of progressive myopia in one, and a normal state of the other. The cornea of the smaller eye appears nearer the inner canthus than that of the larger eye—an appearance that may mislead. 3. The tendon may be missed or divided too far from its sclerotic insertion. 4. The after-treatment may be improper, or the patient may object to a second operation, or to necessary glasses, &c. Mr. Watson held that the operation should be avoided or deferred in periodic squint, apparent squint, and squint in very young children who cannot wear glasses, and in brain cases. He further urged the use of the strabismometer, invented by the late Mr. Zachariah Laurence.—*Lancet*, Dec. 24, 1871.

MIDWIFERY.

45. *Induced Premature Labour, its true Value.*—Dr. O. Spiegelberg, in the *Arch. f. Gynäkol.*, 1870, 1., and of whose paper we find a brief analysis in the *Centralblatt f. d. Medicin. Wissenschaften*, 1870, No. 45, expresses the opinion

that the high estimation in which the induction of premature labour in certain obstetrical cases is held is—1st. Because the question as to the true value of artificially induced premature labour in cases of contracted pelvis has never been tested by an examination of the favourable and unfavourable results, so far as concerns the safety of mother and child, or either of them. In labours occurring in females with contracted pelvis, the comparison has been made only between the results of the different procedures practised to effect delivery in the cases of labour referred to. 2d. Because, hence the value of artificially induced premature delivery, is based upon the largest number of cases in which the infant was born alive when that proceeding has been resorted to, in place of being tested by the actual amount of lives, of mothers and infants, which survive as a general rule, in all cases of labour occurring in females with contracted pelvis. Such a course cannot be expected to lead to accurate conclusions. To endeavour to attain such conclusions, Dr. S. arranges in five tables a number of cases of delivery in persons with contracted pelvis, some of which occurred in his own practice, and part were reported by other practitioners, showing the mortality which took place in each case, as respects mothers and infants. The 1st table embraces 1224 cases of labour in females with contracted pelvis, generally. In 93.3 per cent. of these cases the result was favourable to the mother, in 6.7 per cent. she died. Of the infants, 71.2 per cent. were saved, and 28.7 were lost. The 2d table, shows the result of 271 cases in which premature labour was artificially induced. In 81.1 of these, the mother was saved, in 18.9 per cent. she died. Of the infants, 33.9 per cent. were saved, and 66.1 per cent. died; part were dead-born, and in part death occurred subsequent to birth. The 3d table embraces 587 cases of spontaneous birth in females with contracted pelvis; of the mothers, 93.5 per cent. did well, and 6.5 per cent. died. Of the infants, 64.9 were saved, and 35.1 per cent. died. The 4th table comprises 219 cases in which artificial premature labour was induced in females with contracted pelvis. Of the mothers, 84.9 per cent. were saved, and 15.1 per cent. died. Of the infants, 33.1 per cent. lived, and 66.9 per cent. died. The 5th table comprises 239 cases of extremely contracted pelvis, in which delivery occurred without the induction of premature labour. Of the mothers, 85.7 per cent. did well, and 14.2 per cent. died. Of the infants, 41.4 per cent. lived, and 58.6 per cent. died.

An examination of the tables given by Dr. S. will not prove anything in favour of forced premature labour. The cause of the unfavourable results to the mother are the sudden and forcible distending of the outlet of the womb, not yet prepared to give way before the force propelling upon it the presenting portion of the child, in conjunction with the direct injury inflicted by the operation upon the uterus. The mortality among the infants is accounted for by the fact of their premature birth, and the difficulty, under such circumstances, even when born alive, of their being reared in the families of the poor, among the females of which cases of contracted pelvis are most apt to be met with. The following are the conclusions arrived at by Dr. S.: 1. That a resort to enforced premature labour is of very doubtful propriety when the contraction of the pelvis is not under 8 centimetres. The operation should always be confined to cases in which the contraction of the pelvis is found to fall below 8 centimetres. Even then only when we have no reason to suspect, from the circumstances of former labours, that the infant may be of large size, the cranium unyielding, and the presentation unfavourable. In such cases, in which there is to be apprehended, that if delivery be deferred to the termination of the full period of utero-gestation, severe injury may be incurred by the perhaps already diseased pelvic organ. 2. Habitual dead births do not always indicate a necessity for the induction of premature labour, but of attention to its cause, which will be usually found to consist in a diseased condition of the mother, in general of syphilitic origin. 3. When the continuous death of the children is the result of maternal disease, and which cannot be prevented by any more desirable means, then, as a last resource, the induction of premature delivery must be had recourse to. D. F. C.

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46. *Prolapse of the Funis, and its Treatment by the Postural Method.*—Dr. BRUNTON read a paper before the Medical Society of London on this subject.

(*Lancet*, Dec. 24, 1870.) He reviewed the methods of treatment advocated in obstetric works, and showed that all of them were deficient in applicability and in good results, compared with the postural method, which was always applicable, the hand being the only instrument required, whilst there was no danger in its employment to the mother, as in version. Out of ten cases treated by this method by Dr. Brunton, in eight the children were born alive, and the death of the children in the two remaining instances was accounted for by special causes, one child being dead before the operation was commenced. The procedure consists in altering the direction of the internal axis or plane, which is downward and backward when the mother lies on her back, and nearly level when she is in the usual obstetric position, by placing the patient on her hands and knees in the attitude of an Eastern worshipper, so that the axis is made to pass backwards and upwards; and under these circumstances the cord can be returned by the hand during the intervals of pain, or by its own weight it slips up beyond the head. When the funis is returned, and the pains bring the head down, the usual position may be assumed by the patient. The author has not seen the postural method described in the manuals of obstetrics except cursorily, and he believed that its more frequent use would tend to diminish the infant mortality from funis presentations.

[The reader will find in the different medical journals published within the past few years abundant evidence of the value of this mode of treating prolapsed funis, which was brought into notice some years since by Prof. T. G. Thomas, of New York.—Ed.]

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47. *Spontaneous Inversion of the Uterus.*—Dr. J. H. Tylecote reports (*Brit. Med. Journal*, January 28, 1871) the following case of this: A young married woman had been attended by a neighbouring practitioner in her first confinement on October 30th, 1868. The labour was natural, except that it was followed by rather profuse atonic hemorrhage. The following day—twenty-four hours after delivery—her medical attendant was sent for hurriedly; and, when he arrived, found that, after a sudden accession of powerful expulsive pains, complete inversion and extrusion of the uterus had taken place. There was no hemorrhage, but the patient was anæmic from the previous loss, and seemed very prostrate, with rapid, feeble pulse. He immediately returned the uterus within the vagina; but, experiencing some difficulty in effecting its further reduction, procured my assistance. We put the patient under chloroform, and, without much difficulty, he succeeded in restoring the uterus to its natural position, after it had been inverted for five hours. The procedure which he adopted consisted in grasping the inverted uterus with the right hand, introduced within the vagina, exerting at the same time powerful upward pressure until the vagina was fully on the stretch, when he became sensible of the gradual recession of the tumour. Following this up carefully with my fingers, he soon found his hand occupying the cavity of the uterus, showing that its natural condition was restored. The reduction took place without any perceptible jerk. He retained his hand in the uterus for a time, and grasped it externally with his left hand until firm contraction was excited, when he cautiously withdrew the hand from the uterus, and no recurrence of the displacement took place. The patient made a good recovery, without the supervention of any inflammatory symptoms.

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48. *On Prolapsus and Elongation of the Uterus.* By Robert Barnes, M.D., Lecturer on Midwifery at St. Thomas's Hospital.

Prolapsus of the uterus and hypertrophic elongation of the cervical portion of the uterus are now always thought of in association. Since Huguier published his views in 1859, it has become almost a general belief that true prolapsus does not exist; that it is only an apparent condition; that the real condition is always hypertrophic elongation, the cervix growing until the os appears beyond the vulva. That this is true of a large number of cases is clearly established; but it is not true to the absolute exclusion of prolapsus. Nor is it true that the discovery of the frequency of elongation of the cervix is due to Huguier. In the grandest pathological work of this century, Cruveilhier figured and described

it as of constant occurrence. Jules Cloquet also has given an accurate representation of it (*Pathologie Chir.*, 1831). Samuel Cooper, in his *Surgical Dictionary*, quotes the descriptions of Cruveilhier and Cloquet.

The use of the fingers and the uterine sound will make it clear to demonstration that the cases of apparent prolapsus uteri are divisible into two classes. In the first class the prolapsus is real as well as apparent. Enveloped in the protruded inverted vagina, the entire uterus may be felt; its whole contour may be surrounded by the fingers; and the sound, passed through the os, further determines with exactness the size and position of the organ. It is of normal size, perhaps less; and it is almost always retroverted. This form is observed most frequently in elderly women who follow laborious occupations. It is a joint product of senile atrophy of tissue and of expulsive force acting upon the contents of the pelvis. As the uterus is driven down, the cervical portion, being attached to the base of the bladder, is relatively the fixed centre of rotation; while the fundus, compelled to follow Carus's curve, describes a circle round its os, so that at the outlet the fundus looks backwards.

In the second class of cases the prolapsus is only apparent. There is the hypertrophic elongation of the uterus, chiefly but not exclusively involving its neck, of Cloquet, Cruveilhier, and Huguier. This condition almost always arises during the childbearing period of life, and in women who have borne children. It is a result of chronic endocervicitis, mainly promoted, but not necessarily so, by laborious occupations. The mechanism of its formation I will explain on another occasion. The body of the uterus maintains its normal elevation and direction, or nearly so; whilst the supra-vaginal portion of the cervix, growing downwards, carries with it a reflection of the vagina, which forms the covering of the apparent prolapsus. Of course, this elongation may be met with at any stage of its progress. In the early stages, before it appears beyond the vulva, the lips of the os uteri are everted, gaping. The sound will always measure accurately the extent of the elongation. It is a remarkable fact, which I have often demonstrated clinically, that the extreme elongation is five inches—*i. e.*, exactly double the normal length of the uterine cavity. The fingers compressing the protruded portion will trace the elongated cervix as a firm cylinder, feeling like cartilage, through the reflected and thickened vagina, up into the pelvis.

The two forms of uterine disease, being essentially different in their origin and nature, demand different methods of treatment.—*Brit. Med. Journ.*, Jan. 7, 1871.

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49. *Strangulation of the Uterus.*—Dr. GRAILY HEWITT says this condition of the uterus is that in which the circulation in this organ is mechanically and forcibly interfered with, the result being acute congestion of the body of the uterus and various secondary effects. This strangulation is present when the uterus is forcibly bent upon itself, most markedly when it is bent backwards. It is a marked feature in most cases of flexion; and it is acute or chronic according to circumstances. It occurs as a necessary result of acute flexion, the arteries, but more particularly the veins, being partially occluded by the bending of the uterus. The acute pain and tenderness of the body of the uterus in such cases are due to it. The nerves are also pressed upon at the seat of the flexion. It was the opinion of the author that this strangulation of the uterus is a principal pathological element in all cases where hysterical convulsive attacks are observed; the acute congestion of the uterus determining directly, as well as indirectly, the occurrence of the convulsive seizures. Strangulation of the uterus and chronic inflammation of the uterus are intimately related and mutually co-operative in giving rise to the various sufferings present in many cases of uterine disease.—*British Med. Journal*, Oct. 1, 1870.

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50. *Anteversion Pessary.*—Professor SIMPSON exhibited to the Obstetrical Society of Edinburgh (Nov. 9, 1870) an instrument which he had found useful in relieving the distress attendant on anteversion of the uterus, and made the following remarks:—

"A large proportion of the cases of this form of uterine displacement call

for no kind of mechanical treatment. A certain degree of anteversion or anteflexion is to be regarded as the normal condition of the infantile uterus; and after the menstrual function is established, it still persists in a considerable number of women. M. Panas (*Archiv. Gén. de Médecine*, 1869, p. 274) examined 114 women with the view of ascertaining the position of the uterus, and found it straight only in about a third of the cases. His statistics are these: Uterus straight in 44; anteflexed, 40; anteverted, 12; retroflexed, 3; retroverted, 3; lateriverted, 12. He noted further that the uterus was found more habitually erect in proportion with the advance of the patient's age; and that early menstruations occurred most frequently where the uterus was still displaced, the mean age at which the menses appeared in women with straight uterus being 16.3; whilst the mean age at which they appeared in cases of flexion was 13.2. Besides these congenital cases, we find the uterus becoming displaced forwards as a result of the contraction of peritoneal adhesions, or the growth of a fibroid nodule in its anterior wall, or some morbid influence brought to bear on it during the relaxation of the puerperal period; and even in these the anteversion or anteflexion does not always give rise to such distress as to necessitate our interference.

"Again, as is well known, the suffering associated with the displacement is often neuralgic in character, and requires for its relief the use of various nervine tonics and sedatives; or it may be inflammatory, and require the employment of antiphlogistics, etc.

"But there are yet other cases, and these not a few, where we cannot afford relief to our patients, except by the application of some mechanical support. I have seen the plan first proposed, I believe, by Dr. Moir for the treatment of retroflexion useful in cases of anteflexion. Especially where it is associated with a marked degree of hypertrophy, I have seen the introduction of a spongetent straighten the anteflected organ, and set up an absorptive action in the thickened walls. For other cases I have found the intra-uterine stem pessary, with which we are all familiar, yield the most satisfactory results; and in the case which has led to my present communication, no other means that were employed afforded any permanent relief. Various modifications of Hodge's and all other vaginal pessaries were tried for a long series of months and years; the only instrument that seemed to the patient to give any hope of ease being Dr. Graily Hewitt's. But even with it the pain in the left groin, which was her most distressing symptom, always remained acute as ever when she turned upon her side, so that she could never sleep except when lying on her back. To sit up or stand was for her an impossibility. The intra-uterine stem pessary was the only instrument that kept the uterus in such a position as to enable her to obtain the much-desired rest on the side; but, unfortunately for her, the instrument only produced its effect when it was itself kept in position by the wire frame adjusted over the pubes. So great was the relief it gave, however, that although it produced a degree of menorrhagia, she had worn it continuously for about a year and a half, till, from its pressure on the anterior lip of the cervix, it had begun partially to divide it. When she came under my care, I found that by pressing up the fundus with the tips of two fingers the pain was relieved; and in order to keep the fundus permanently supported in this position I got an instrument made, such as I now show to the Society. It is a bivalve pessary made of vulcanite, the fenestrated valves having the relation to each other of anterior and posterior, united by a hinge at their lower end, and kept apart by a slight spring. The anterior valve has a notch in its upper free border to receive and support the body of the uterus; the posterior is somewhat longer, and, by pressing upwards the posterior vault of the vagina, supplements the function of the recto-vaginal and the utero-vesical ligaments.

"In some cases where I have employed it, the instrument, as I have just described it, has proved serviceable; but in the particular case to which I have referred, I found it necessary to adapt a tube to the lower end of it, so as to allow of a wire frame passing from it to be fixed over the pubes. The lady has been wearing it for several months, with the happy result of being able to sleep comfortably on either side. She has, moreover, been enabled to move about the house, and when at the sea-coast during the summer she enjoyed open-air

exercise in the way of driving and boating, to a degree to which for sixteen years she had been a perfect stranger."

"Dr. KEILLER said that he had repeatedly shown to the Society pessaries made of gutta-percha and vulcanized India-rubber. One of these consisted of a couple of ring pessaries, which, when put together, made an instrument somewhat similar to that described by Professor Simpson. At a previous meeting he mentioned that two of Hodge's pessaries, united by the one being pressed into the ring of the other, fixed themselves. He thought it an advantage to have the rings separate. One great advantage of having the instruments made of gutta-percha is, that they can be moulded, and applied not laterally, but behind and in front. It is difficult to cure retroversion, which occurs most frequently in women who have had children; whereas anteversion is most common in virgins. It often occurs, however, in married women, and is a cause of sterility. He was of opinion that anteflexion was more easily cured by Professor Simpson's instrument than anteversion. The great difficulty is to keep the instrument in position, and yet not prevent intercourse. He had operated according to the plan recommended by Marion Sims, and in one case the patient afterwards became pregnant. He thought Professor Simpson's pessary was likely to be very useful, as there was no intra-uterine stem. Dr. Keiller's experience did not quite bear out the favourable opinion entertained by Sir James Simpson as to the intra-uterine stem pessary. He thought it was of great importance to have the anteversion portion of the pessary spread out, so as to stretch the anterior wall of the vagina."—*Edinburgh Medical Journal*, January, 1871.

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51. *Case of Puerperal Mania treated by Chloral.*—Mr. FURLEY made some remarks on puerperal mania before the Obstetrical Society of Edinburgh, and related the following case which he had successfully treated with chloral:—

"Mrs. W., æt. 21, a primipara, sent for the midwife engaged to attend her at 5 A. M. on the 7th of June. She had been complaining during the night of slight pains, but not sufficiently strong to warrant her in disturbing any one. Shortly before five o'clock, however, the pains became much more severe in their character, and she deemed it necessary to send for her attendant. When the midwife arrived, she found the os well dilated, and the head descending in the first position. The labour progressed quite naturally, and she was delivered at 8 A. M. The convalescence proceeded satisfactorily until the eighth day, when the secretion of milk and the lochia were very much diminished; she continued in this state for three days, when I was called in, and found her in the following condition.

"The patient was sitting up in bed with the infant on her lap, tossing it from side to side, and rolling it about. When the baby was taken from her she rose up and made for the window, and said she wanted to go out by it; her long hair was dishevelled, and was hanging partly over her face; her countenance was pale, and had an appearance calculated to arouse suspicions of albuminuria. There was no urine to be obtained for examination, and I had to trust to the look referred to. I was informed she had not slept for three days and nights. This, my first visit, was on the evening of the 18th of June. I gave the usual directions as to her being carefully watched, and ordered a dose of castor oil immediately, and half a drachm each of chloral and acetate of potassa every four hours. My reason for giving the chloral, of course, is sufficiently obvious, viz., as a sedative to the nervous system, and with a view to procure sleep. The acetate of potassa was administered to diminish the supposed condition of albuminuria, which her appearance had strongly made me think was present; and my former experience of the acetate, especially in puerperal convulsions, gave me thorough reliance on its efficacy. On the morning of the 19th, when I called, I ascertained that twenty minutes after she got the first dose of chloral she fell asleep and slept for three hours. She still talked nonsense, wept occasionally, but was much calmer than on the previous evening, and had taken tea, toast, and an egg for breakfast. The examination of the urine at least by heat did not show, as I had suspected, the existence of albumen. I ordered the chloral and potassa, however, to be continued at the same intervals and in the same quantity. The next day, the 20th, she was much

quieter—had occasionally talked rationally, and had taken her food willingly. Ordered a pint of beef-tea, and medicine to be continued. On the 21st, I found she had slept from 10 P. M. till 5 A. M., was much more rational, and had taken her food well. She occasionally tore her hair, and it being impossible to keep it in anything like order, it was removed, with the exception of a small portion in front, preserved for the sake of appearance. The same directions as to food and medicine were given. On the 22d I found that she had slept the whole night—talked rationally, answered questions coherently, was a little peevish, and wondered what had been wrong with her. On the 23d she seemed quite rational, but very weak. Ordered medicine to be given every eight hours, instead of four hours as before. On the 24th, six days after I saw her, and ninth from the invasion of the disease, she was able to be up for an hour, and was quite rational. On the 25th, 26th, and 27th, she was up the greater part of the day; and on the 28th, ten days after my first visit, when I called I found her dressing the baby, and attending to her household duties. I looked in upon her for some days subsequently. Her milk gradually returned, and she was able to suckle her child.

"I am thoroughly convinced that the chloral in this case was the agent which produced so beneficial a result, and I feel perfectly satisfied from my experience of it in this and other diseases, which I may at some future time bring under your notice, that what chloroform is to surgery, chloral will be to medicine."

"Dr. Fraser said that acetate of potassa was changed into the carbonate in the system; and as chloroform was evolved from chloral when it met with an alkali, this might account for the success of chloral in Mr. Furley's case. The acetate also keeps up the quantity of urine, which chloral tended to diminish."—*Edinburgh Med. Journ.*, January, 1871.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

52. *Strychnia Poisoning.*—The *Glasgow Medical Journal* for February last contains a highly instructive paper on this subject by Dr. J. St. Clair Gray, in which he gives an account, based upon an analysis of 143 recorded cases, of the succession of symptoms which are typical of the action of the alkaloid, and further shows that there is no symptom present in every case which can be said to be absolutely characteristic. He also describes the mode of death and post-mortem appearances, and the modes of detecting the poison, and finally points out the modes of treatment. In regard to the last topic he says: "The first procedure which ought to be adopted is the perfect evacuation of the stomach, and for this purpose emetics should be administered freely, and their action aided by the free use of demulcent liquids, as milk, gruel, or warm water; the animal temperature should be well sustained by warm applications externally, while, after the evacuation by the stomach, a mild laxative, as castor oil or magnesia, should be given. Great attention should be paid to the respiration, and should any tendency to asphyxia appear, artificial respiration should at once be begun, and continued, till respiration is properly re-established, or till it entirely ceases. Much discussion has taken place on the part of various writers on this subject as to the antidote for this poison, and there have at various times been proposed woorara, tobacco, chloroform, charcoal, camphor, hydrocyanic acid, tannin, iodine, bromine, chlorine, morphia, coneia, aconite, albumen, kermes mineral, iodated iodide of potassium, lard, and, latterly, the Calabar bean and hydrate of chloral. Of these agents, those which demand special attention are woorara, chloroform, tannin, Calabar bean, and hydrate of chloral. I have at various times performed experiments with all these save tannin, but certainly from these experiments it appears extremely doubtful whether they possess any efficacy if administered subsequently to the accession of the tetanic spasms. Thus with woorara, chloroform, and Calabar bean I have frequently succeeded in retarding the appearance of the spasms, and, as I thought, in mitigating their severity when produced, but in every experiment a fatal result ensued, apparently either from deficiency or excess of the sup

posed antidote. As to the efficacy of hydrate of chloral, I can say with certainty that in the frog at least it does not act as an antidote. After its administration the animal at once becomes flaccid, but very shortly thereafter the tetanoid spasms reappear, and the animal eventually dies, either from the effect of the strychnia or of the chloral, but in no case in my experiments did a successful result attend its exhibition.

"While examining the contributions on this subject, it occurred to me that nitrite of amyl might, from its physiological action, prove an antidote, this idea being strengthened by the results which were obtained by Messrs. Brown and Frazer in their experiments on the modifications produced on physiological action by chemical addition. With this agent I have made several experiments, which were confined to rabbits, as being the most easily obtained. The result I may briefly state—20 rabbits being operated upon. Of these 10 died in the first spasm, and consequently the nitrite of amyl was not administered. In the others the remission after the first spasm having appeared, the nitrite was exhibited in six cases by inhalation, in two by subcutaneous injection. Of these the symptoms were prolonged for 40 minutes in one case, for 43 minutes in another, for one hour in another, for one hour and ten minutes in another; these, however, ending fatally. The other four recovered, one after the interval of one hour, another after an interval of one hour and a half, another in two hours, while the last, to which during four days a dose of the sulphate of strychnia, amounting to 10 grains, had been given in divided doses, recovered perfectly. With the exception of this last, the dose administered to the others was a quarter grain each of the acetate, irrespective of the size of the animal. To the two others there was administered a mixture of half a grain of strychnia, with 12 minims of nitrite of amyl, and in neither case did any marked symptoms appear, although carefully watched during three hours. There was at first a slight amount of apparent depression, but after the lapse of half an hour this had entirely disappeared, and they are at present alive and well.

"Such are the results of these experiments, and I have only to regret that as yet I have not had an opportunity of experimenting with this agent upon dogs, which are not so liable to die in the first spasm. I intend, however, to pursue this subject further, and shall take an early opportunity of presenting to the Society the results obtained.

"One fact, which at least is very curious, is that the animals to which the nitrite was exhibited seemed to experience considerable relief from its administration; and, I may add, that two of the students of the Forensic Class, who witnessed the experiments, noted, that whenever I removed the cloth by which the amyl was exhibited the animal followed it as far as possible with its head, and maintained it in this position until the cloth was more closely applied."

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53. *Rupture of the Stomach from Violence without any External Injury.*—Mr. DAVY exhibited to the Pathological Society of London (Nov. 15, 1870) the ruptured stomach of a dog, which had been run over in the streets. There was no external injury, yet the stomach was traversed by a large rent.—Mr. Arnott had no idea that these cases were rare, or he would have brought some before the Society. In one case a little boy fell from a ladder; there was no external mark, yet there was a large rupture of the stomach. At University College Hospital, a man came complaining of colicky pains. He had already been supplied with diarrhœa medicine; while there, he was taken very ill and speedily died. The day before he had a fall and hurt his side, but he walked home and partook of a meal as well as of the physic. There was a large rent in the wall of the stomach, and its contents were lying in the peritoneal cavity.—Dr. Murchison had seen as many as three in one day, the result of a railway accident, the passengers' stomachs being full.—Mr. Hulke had seen a case where the stomach formed part of the contents of an umbilical hernia, and, in forcible attempts at reduction, a rent of four or five inches long was made in its wall.—Dr. Moxon had seen the stomach of a boy run over by a carriage, where the vertebral column seemed to have cut the stomach like a knife.—Mr. Arnott alluded to another case of a young man playing at foot-ball, who had received a blow from an elbow; death followed on the second day. There was a large opening in the jejunum.—*British Med. Journal*, Dec. 3, 1870.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Case of Amnemonic Aphasia. By T. S. SHARPE, M.D., of Natchez, Mississippi.

On Jan. 17, 1870, Dr. McPheeters was called to Mrs. S., aged 50 years, of this city, who was then suffering from pulmonary congestion. She was relieved in a short time of the most distressing symptoms, but at his next visit he found her quite uncomfortable from an intermittent fever, for which he advantageously prescribed quinia. She had no symptoms of hysteria.

On the 20th (three days after her attack), whilst Dr. McP. was in her room, her tongue became suddenly paralyzed, and remained so for an hour. Soon afterwards I saw her for the first time. She was quite comfortable; pulse about 86; skin moist; expression of the face natural. She was free from all symptoms of pulmonary disease, and the use of her tongue was perfect; heart unaffected; pupils normal; abdominal organs performing their functions satisfactorily, and her only complaint was that the left side of her head pained her. She was unable to "translate ideas into symbols." Her intellectual faculties were undisturbed, and her co-ordinating power over the muscles of articulation was perfect; the diagnosis was amnemonic aphasia.

During our visits she talked almost constantly, but unintelligibly, and for several days evinced great astonishment at the inability of those around her to comprehend her meaning. The expression of her face was lively and intelligent, and she took manifest interest in all that was going on around her, but she coined words so rapidly, and substituted for the forgotten symbol a different one, with different meaning, so often, that no one could understand her.

Her improvement, under the plan of treatment adopted, was very slow, and it was not until the 24th that she was fully aware of the fact that her "gibberish" was incomprehensible. She gradually lengthened her sentences by daily adding one or two words, and when asked, on the morning of the 26th, "How do you feel this morning?" she replied, "I am better this evening;" and when informed she had not dined yet, she corrected herself. When speaking of a lady with light auburn hair, of her acquaintance, she invariably called her "fire," without attempting to name her; and on more than one occasion she let us know that she was speaking of a neighbour of Falstaffian proportions by extending her arms, then locking her hands, and moving them up and down over her abdomen, but she never called his name until a decided improvement took place. Her lawyer was named Martin. She invariably called him "bird," nor could she be induced to pronounce the word Martin. She spoke of Dr. McP. as "her doctor," and when speaking of myself, she would say "he" said so and so, or "he" did this or that, but made no attempt to repeat either name.

About the 28th of the month she located the pain in her head, at or near the line of suture, between the frontal and left parietal bones, and said the seat was not larger in circumference than a silver quarter of a dollar.

She continued to improve until the morning of the 19th of May, when business called her to the court-house. The day was oppressively warm, and on her return home she suddenly became very weak, and a momentary insensibility ensued, followed by a fever; however, she soon grew better, and left this place for Kentucky on the 27th of May. Since then she has improved but little.

This case of aphasia is one of some peculiarities, and one where the disease was seated, in all probability, in the third frontal convolution, or the white matter near it, of the cerebrum. It differs from the cases reported by Ogle and by Trousseau. From Ogle's experience, he avers that[1] "the moment he (the patient) is prompted, he is able to go on." In Mrs. S.'s case it was not so. She could not use the word she required after it was repeated for her—not even after it was spelled and pronounced for her—nor did she observe the grammatical forms, as Dr. O. asserts[2] they constantly do.

For some time after convalescence she could not write a connected sentence—would write one word for another—and it was with difficulty she could read the short paragraphs of the morning paper, without spelling each word.

The pain in the head she complained of she located as above stated, and, up to the time of her departure for the West, she continued to speak of the pain remaining "at the same spot" where she felt it for the first time. This fact satisfies me that the diseased point was beneath the seat of pain, and that it was in the third frontal convolution of the left side; and further, this case is one which supports MM. Dax and Broca in their theory, "that the seat of the faculty of speech is on the left side," corresponding very nearly with the line of suture between the frontal and parietal bones.

Case of Fracture of the Fifth Cervical Vertebra, Laceration of the Spinal Cord, Complete Paralysis of the Body, and Prolongation of Life for three months. By BROOKS R. HAMILTON, M. D., of Nauvoo, Illinois.

May 2, 1866, was called to see W. S., a small spare-built man, æt. 62, who, whilst pruning a tree, missed his hold and fell to the ground, some twelve feet, striking on his head. He was suffering much pain about the posterior portions of the head and neck, with inability to move the head without great pain. There was complete paralysis of both sensation and motion from the base of the neck down, except in the outer portions of the deltoid muscles, and in some parts of the biceps of both arms, at which points imperfect sensation still remained; intellect clear, and respiration entirely diaphragmatic.

A careful examination failing to develop displacement of any of the vertebræ, I inferred that the injury might possibly be concussion of the spine, but was, most probably, fracture of the fifth or sixth cervical vertebra, and that, if such proved to be the case, death would most likely be the result.

Dr. J. F. Weld, an old and much respected practitioner, was called in

[1] St. George's Hospital Reports, vol. ii. p. 74. [2] Ibid., p. 75.

consultation, who agreed with me in the diagnosis and prognosis. Patient remained much the same throughout the night and following day. Beef-essence, stimulants, and morphia were administered in sufficient quantities to support life and mitigate suffering.

On the evening of the second day an "interloper" asked permission of the family to administer strychnia and arnica, "specifics" which he had known to save the lives of different persons "hurt just this way." Dr. Weld and I, of course, objected to the exhibition of any such "specifics," as they would not only be useless, but positively injurious.

We were answered: "Your prognosis is death. Homœopathic medicines are not strong, and if they do no good, they will do no harm." We, of course, retired from the case.

The administration of strychnia and arnica, alternately, every thirty minutes, did not very satisfactorily justify the assertions that they were "not strong," and that "if they did no good they would do no harm," for, in some twenty-four hours, the characteristic tetanic contractions, from the excessive use of strychnia, became generally developed, and with such an increase of suffering and sense of impending death that I was again called upon to take charge of the case.

After the effects of these "harmless" agents had passed off, the patient remained much the same for two or three weeks, when his suffering became less intense. All through the warm days of May, June, and July the diaphragm was the only muscular structure engaged in carrying on the function of respiration. During this time the bowels were relieved at proper intervals by washing the feces down with a Davidson's syringe and warm water, and scooping it out in the usual way. After some six weeks the urine dribbled away, doing away with the use of the catheter. His friends procured a large rubber air-mattress, rubber cushion for the sacrum, urinal sac, etc., all of which did much towards making him comfortable and prolonging life.

Such palliative remedies were exhibited as seemed to be indicated from time to time. After the local inflammation was sufficiently subdued, electricity and strychnia were cautiously tried, but always without benefit, and if carried sufficiently far, with an aggravation of suffering. The patient's intellect remained clear, appetite became good, and the digestive functions appeared to be perfectly carried on.

There were many troublesome complications coming up during the entire progress of the case, prominent among which were sloughing of the integument and fascia from over the sacrum and os calcis, inflammation of the right testicle, with formation of matter, and catarrh of the bladder. By changing the position of the patient, and relieving the pressure on the sloughing parts, healthy granulations were set up, and much progress apparently made toward recovery—until a short time before death. The urinary discharge again became natural, and the testicle healed after evacuation of the pus. There was no improvement in the paralysis, and the patient died July 30th, ninety days after the injury.

Before death there was a general disorganization of the whole system from the neck down. Mortification had made terrific advances along the back and spine, and in the lower extremities—death being hastened by septicæmia.

Autopsy eight hours after death.—With the assistance of Drs. Weld and Coggswell, I cut down upon the injured part, and found the spinous process of the fifth cervical vertebra broken off near its base—through

the laminated portion of the bone—on each side, and tilted over to the right, with the sharp edge pushed well into the spinal canal.

The portion of bone, after separation from external attachments, was perfectly loose, and could be removed by the fingers alone. The meninges and cord were softened and broken down.

Owing to restrictions placed upon the autopsy by the family, the examination was carried no further.

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Fracture of the Superior Maxillæ. By SAMUEL W. LATTA, M. D., Assistant Surgeon U. S. Navy.

S. M., white, age 33, while working on the deck of the U. S. steamer Alaska, during a gale of wind, on July 9, 1870, was struck in the face by the "leading block of a reef-tackle." Both superior maxillæ were separated from the superior facial bones without much displacement. The teeth, alveoli, and hard and soft palates were not displaced with reference to each other, nor was there obvious injury of the mucous membrane of those parts. The whole (teeth, alveoli, &c.) dropped down perceptibly when force was applied to any part. Slight wound of left ala of nose externally. No other flesh wound. Bleeding freely from posterior nares, both through the nose and down the throat. He soon recovered his senses after the accident.

Diagnosis.—Fracture of the superior maxillæ at their union with the superior facial bones.

Ordered to inject nares with cold water, rinse mouth frequently with water, to lie in semi-recumbent position, and keep both the superior maxillæ at rest. R. Liq. morph. sulph. ʒj at night.

On July 10th his face was very much swollen; eyes closed; bleeding decreasing gradually; slept well; breathes freely through the mouth; nose plugged with clotted blood; talks with difficulty. Ordered fluid food; wash face with the following, viz.: R. Alcohol and water, equal parts. Morphia at night. No other treatment was adopted.

Swelling gradually disappeared, bleeding ceased, and on August 15th he was discharged fit for duty. Bones not at all movable. No deformity whatever resulted from the injury.

In this case there was undoubtedly osseous union. The great trouble in these cases, when much swelling exists, is to make a positive diagnosis. This was done in the above case by discovering the movement of the superior maxillæ.

U. S. STEAMER ALASKA, HONG KONG, CHINA, Oct. 4, 1870.

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Encephaloid Tumour of Rapid Growth. By LEVI BARTLETT, M.D., of Skaneateles, N. Y.

T. P., aged 24, after having carried, on his head, a straw bed half a mile without resting, which exhausted him much, discovered, two days afterwards, Nov. 26, 1870, a tumour, as large as a hen's egg, above the right clavicle, which increased in size on coughing, and at times appeared very much to diminish. Dec. 21, I first saw him. Tumour firm, elastic, twice its former size, and not painful; cough dry and spasmodic; pulse 80 to 90, small and feeble, demanding stimulants; pressure of the tumour on the œsophagus and trachea caused difficult deglutition and respiration, and pain in the surrounding parts. Jan. 3, 1871, tumour softer, with indistinct fluctuation, and more like pointing. Dr. Campbell in consultation.

Exploration revealed a venous blood tumour; applied solution of iodine. Jan. 8th Dr. Earll was added to the consultation, and, on the 10th, Dr. Lansing Briggs, of Auburn. On second exploration we concluded that the tumour contained arterial blood, though there was no pulsation. This uncertain diagnosis and the dangerous locality of the tumour, we considered, precluded surgical interference.

Tumour at first spherical, afterwards oval, and at its maximum was five by two and a half inches. Gradually it assumed a harder and nodulated feeling, and diminished one inch in length. From the 12th to the 27th inst. his pulse was increased in frequency and hardness, accompanied with cough and bloody expectoration and palpitation; œdema of right arm and hand, with numbness and pricking sensation; serous effusion into the eyelids and adnata; paroxysms of dyspnœa, frequent respiration, with a rough rhonchus and prolonged expiration; right submaxillary gland much enlarged, and all the surrounding tissues appear full and engorged.

I had diagnosed "venous erectile tumour," similar in symptoms and locality to that of General Kilpatrick, successfully operated on by electrolysis last year. Dr. G. T. Campbell, after perusing Dr. Gross's chapter on tumours, in his excellent "System of Surgery," diagnosed encephaloid of the hæmatoid variety. Patient died on the 27th, and on the 28th the autopsy, made by Drs. Campbell and Earll, revealed a strictly encephaloid tumour, with so fragile an envelope as to preclude the possibility of enucleation. Apex of right lung adhered to the tumour and clavicle, and assumed a medullary appearance, with some engorgement. Effusion of serum into pleural cavity and the pericardium; liver hypertrophied; thymus gland enlarged, and surrounding tissues engorged; no other organs examined. Dr. Campbell found, on microscopic examination, characteristic cancer-cells, with oil-globules. Patient inherited malignant taint, his mother and sister having died of cancer.

The incipient stage of his disease may have previously commenced, but its rapid development may be referred to his over-exertion nine weeks ago.

Professor Gross mentions the case of a boy of 18, who died in less than eight weeks of an encephaloid tumour upon the scapula, a foot in its largest diameter! Ours is a partial corroboration of that case, which is truly rare.

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Lithotomy.—Dr. O. M. Doyle, of Oconee, S. C., has communicated to us a case in which he performed this operation on a boy æt. 12, and extracted a calculus measuring $5\frac{1}{4}$ inches in its greatest circumference, and $3\frac{3}{16}$ inches in its smallest. The patient made a rapid recovery. The operation was performed without anæsthesia, the patient having exhibited a remarkable intolerance of the anæsthetic tried—a mixture of chloroform and ether.

DOMESTIC SUMMARY.

The Pathological Relations of the Gastric and Intestinal Tubules.—Prof. Austin Flint, in an extremely interesting and instructive article (*New York Med. Journal*, March, 1871), directs attention to the gastric and intestinal tubules, as inviting further researches with reference to morbid changes and their pathological relations. He states that for many years he has "had a strong conviction that the secretory glands of the alimentary canal constitute a territory in pathology, until lately almost a *terra incognita*, whence are to be derived very important additions to our knowledge of disease. It has seemed

to me a rational supposition that destructive lesions of these glands exist in a class of cases characterized by progressive and fatal inanition taking place without the evidence of disease existing elsewhere sufficiently to explain the symptoms and the termination. I have long been accustomed in lectures and consultations, as also in published writings, to predict that, in the cases now referred to, the tubules of the alimentary canal will be found to be the seat of degenerative changes which, in view of the important functions of these glands, will account satisfactorily for the symptomatic phenomena and death."

Professor F. gives a brief account of some of the cases of this class which have fallen under his observation, and then refers to the histological facts contributed by Drs. Handfield Jones, Wilson Fox, and Samuel Fenwick.

The marked characteristics in the cases of this affection are gradual and at length complete loss of appetite and digestive power, with progressive debility, and death by exhaustion, adequate morbid conditions seated elsewhere than in the glands of the alimentary canal being excluded by an investigation of the symptoms and signs. In the cases Dr. T. cites the patients were somewhat advanced in years—that is, near the age of sixty; they were healthy prior to the illness, which ended fatally; this illness was developed imperceptibly, and advanced slowly; the persons were singularly exempt from apparent morbific influences, being temperate and their habits of life regular; they were in easy circumstances, and, in a great measure, withdrawn from active occupation; the intellectual faculties remained intact up to a few hours before death, and the mode of dying was typical of asthenia.

"The impairment of appetite was the first symptom. I have failed to note the kinds of food against which especially the appetite rebelled. In one of the cases I recollect distinctly that the patient ceased taking animal food in any form, and confined himself to gruel and milk-porridge for months before he was obliged to keep the bed. I think that, in the other cases, the antipathy was greatest toward the albuminoid articles of diet. This is a point of interest, as bearing on the localization of the affection in either the gastric or the intestinal tubules separately, and on the predominance of the affection in either, if both sets of glands be affected."

Having shown from a clinical point of view the existence of a class of cases characterized by anorexia, impaired digestion, etc., and, from the absence in them of adequate lesions elsewhere, the probability that the essential disease is seated in the secretory glands of the alimentary canal, Professor F. asks what is wanted, in order that in this class of cases lesions of these glands, involving loss of their functional capacity, shall be entitled to be recognized as an established fact. To this he answers:—

"The existence of lesions, more or less extensive and destructive, must be demonstrated by microscopical examinations after death. The abnormal changes must be shown to be morbid—that is, not cadaveric; and their constancy in this class of cases must be established by a sufficient number of necroscopical examinations. As I stated at the outset, I have no original observations to offer in relation to these points of investigation. An important contribution, however, has been made recently by Dr. Samuel Fenwick, of London. Dr. Fenwick has demonstrated extensive and destructive lesions of the gastric tubules in a well-marked case belonging in the class the clinical characteristics of which I have considered."

As Professor F. justly remarks, "a single case, however, is not sufficient to establish the anatomical characteristics of a disease. It remains to demonstrate the existence of lesions seated in the gastric tubules, and the absence of adequate lesions elsewhere, in a series of cases characterized by the same prominent events during life. If it be found, in a sufficient number of the cases belonging to the class which seems to be clinically well defined, that lesions of the gastric or the gastro-intestinal tubules are constant, then a new disease is established, or, what is more probable, a new group of diseases, for it is a reasonable supposition that the gastric and the intestinal tubules may be affected separately, as well as conjointly, and also that the lesions in different cases differ in kind as well as in degree and extent. Nor does it, by any means, express all the importance of lesions of these glands, to consider them as the anatomical charac-

teristics of a group of diseases which as yet are unknown in nomenclature and nosology. There are grounds for the belief that lesions here seated are often associated with other diseases, and that functional disorder of these glands enters much more largely into morbid phenomena than has been hitherto supposed."

Abscess within the Cranium.—Prof. N. R. SMITH relates (*Baltimore Med. Journ.*, Dec. 1870) the case of a clergyman, who had received an accidental blow from a sharp stone on the left parietal bone. The blow was followed by inflammation of the pericardium—suppuration and detachment of that membrane from the bone. Then followed necrosis, and a final separation and discharge of a small sequestrum, involving both tables of the bone. There remained a fistulous opening, which never closed during the long period of twenty years. It so little interfered with his general health that he continued, during that time, to discharge the duties of his calling, though occasionally suffering pain in the head and vertigo, especially when the discharge was in any way impeded.

He was first seen by Prof. S. in the summer of 1869, with Dr. Van Bibber, when they found a fistulous orifice surrounded by granulations, which in a measure impeded the discharge. The pus which was daily discharged was of ordinary consistence and appearance, but was fetid.

"We inserted with care an ordinary probe, which, to our surprise, sank by its own weight, apparently through a fluid, into the cavity of the cranium fully two and a half inches, when it encountered the membranes of the brain. By exploring with the instrument cautiously, in different directions, we ascertained the existence of a hemispheroidal cavity within the cranium, almost coextensive with the parietal bone. On withdrawing the instrument, we found it covered with fetid pus. The opening in the cranium was smaller than a quill, and was obstructed by granulations investing its canal. The efforts of nature to restore the normal condition of the parts were defeated by the inadequacy of the discharge, and the occasional aggravation of symptom was attributable to the increase of the granulations, which obstructed the flow.

"I immediately advised, Dr. Van Bibber concurring, that the crown of a trephine should be applied, and a button of bone be removed from the cranium.

"With the aid of Dr. V., I immediately applied a trephine about seven-eighths of an inch in diameter. The progress of the section was slow and difficult, the bone being found of ivory hardness, much thicker than common, and of unequal thickness in various parts of its circumference. We proceeded, however, without hesitation, knowing that the membranes were far removed from the inner surface. At length the button was prized out, and there immediately issued some three ounces of fetid pus.

"We feared some disturbance of the cerebral functions from the sudden removal of such pressure from that organ, but nothing notable resulted. We applied light dressings, so as to allow the discharge to flow without impediment.

"No morbid phenomena of any kind resulted. By inspection and by the probe it was ascertained that the dura-mater was slowly rising and the cavity being obliterated. He left us in some ten days after the operation."

Prof. S. saw the patient last summer, and found him entirely recovered.

Enormous Doses of Chloral taken.—Dr. P. WILLIAMS relates (*Baltimore Med. Journ.*, Feb. 1871) a case of a man who took, it is supposed with suicidal intent, so far as could be ascertained, about six hundred grains of chloral, the only appreciable effect of which was the production of profound coma lasting eighteen hours, ending in complete recovery without any medical treatment during the state of coma. Dr. W. says he did not interfere because the patient's heart and lungs did not seem to be dangerously affected. Dr. W. was fully satisfied of the purity of the drug, from an examination of part left in the package.

Another case is recorded (*Buffalo Med. Journ.*, Feb. 1871), by Dr. W. HALBROOK, of Palmar, Mass., in which a married woman, æt. 24, took over four hundred grains of chloral in half a goblet of water. The patient was soon rendered insensible, and continued so until her death, about fifteen hours after taking the medicine.

Vesico-Vaginal Fistula.—Dr. R. M. HODGES records (*Boston Med. and Surg. Journal*, Feb. 2, 1871) nineteen cases of vesico-vaginal fistula, which, with six previously reported by him (same Journal for Aug. 11, 1864), make twenty-five cases operated upon by him, all but two being performed at the Massachusetts General Hospital. Of these twenty-five cases there were cured 22; not cured 2; died 1. Fifteen cases were cured by a single operation; five by two, and two by three operations. Of the fifteen cases cured by a single operation, the duration of treatment ranged from ten to seventeen days. The smallest number of sutures used in any case was three, the largest twenty-two.

"The occurrence of diarrhœa, of the menstrual period in three cases, and of miscarriage in two cases, did not interrupt the process of cure, and in one instance the patient was pregnant and did not miscarry. In three instances, where the os uteri was turned into the bladder, the catamenial flow, as it subsequently occurred, was readily voided with the urine, and without discomfort to the patient. One patient was three times the subject of the injury, and was each time readily cured, twice by a single operation. In those cases where more than one operation was necessary, a period of four to six weeks was usually allowed to elapse before the second was performed. The long retention of a catheter *in situ* seems sometimes to lead to a temporary incontinence of urine, which escapes per urethram after the fistula has been closed. This has been noticed in two instances. In one the patient was returned to the hospital by her physician, under the impression that a cure had not been accomplished; but the condition disappeared without treatment, and both patients recovered completely from this transient inconvenience.

"Neither of the two cases incompletely relieved seemed to present any intrinsic impossibility of being cured. After three operations a minute opening still remained in one; while in the other, after two operations, the closure was complete enough to enable the patient to retain her urine half an hour. This last patient could not be induced to re-enter the hospital; the other was lost sight of altogether.

"Until twenty-four patients had been operated on, not a single death had followed the procedure. Such an occurrence must, from the nature of things, be infrequent. Indeed, in no other case had any symptoms followed which could be called severe. In the instance reported as terminating fatally, the operation was performed for a fistula of thirteen years' standing, and of the largest description, requiring twenty-two sutures for its closure. The patient's general condition was masked by this desperate local difficulty. As soon as the urine could be collected, it was analyzed and found to be highly albuminous, full of fatty casts, with a sp. gr. of 1004. What was supposed to be delirium tremens appeared on the third day, and the patient died at the end of a week from tuberculosis and pneumonia. There was also Bright's disease of the kidneys. Could this condition of things have been determined beforehand, no operation would have been attempted."

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Carbolic Acid as a Remedy for Carbuncle.—Dr. J. C. NOTT reports (*New York Medical Journal*, January, 1871) the case of a gentleman about fifty years of age, who had suffered severely with carbuncles on his back. When Dr. N. saw him there was a carbuncle, with several small honey-comb openings in the centre, and surrounded by the usual inflammation and hardness, covering a space about the size of the palm of the hand. It was very painful, presented all the characteristics of a severe carbuncle, and Dr. N. thought the patient would make a good escape if he got off with a slough as large as a silver dollar. Dr. N. made a deep incision into it about an inch and a quarter, and stuffed it with cotton saturated with the pure carbolic acid. He also painted over the whole surface of the hardened mass with the acid. The patient complained of a sharp burning sensation for a few minutes, when the pain subsided completely. The cuticle, by the next day, came off, and the surface looked like a burn.

After the first few minutes he was free from pain, and never complained of any afterward. Dr. N. continued every day for a week to insert the acid, in the same way, into the cut, which sloughed all around to the depth of one-eighth of an inch; the surrounding inflammation and induration subsided rapidly, and

in a week there was nothing left to treat but the small open wound made by the knife and acid. Three other small carbuncles commenced, an inch or two from the large one; they were all treated by incision and the acid, and they all aborted.

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Severe Surgical Injury; Recovery.—Dr. A. A. Crosby, Surgeon of Northern Railway, N. H., records (*Michigan Univ. Med. Journ.*, Feb. 1871) two remarkable cases of this.

The subject of the first was a strong railroad hand, strictly temperate, whose life had been one of hard labour, who, at 5 P. M. Oct. 26th, 1868, was at work with others sawing wood with a circular saw propelled by steam. "The wood was piled in the rear of the saw table to the height of about nine feet, and he was standing upon the top of the pile, when it gave way at one side, and he fell directly upon the saw, which was going at the frightful speed of 3000 revolutions per minute, with no wood upon the table to check its force. One of the workmen stated that he was 'thrown all sides up at once'— seemingly tossed like a feather by this most terrible of machines—for it is certainly the cause of more severe and fatal accidents than all other machines together, excepting always the locomotive and cars. He was only upon the saw for a very few seconds, when he was thrown to the ground, being neither able to assist himself nor be assisted by others. In fact there was not time even to throw off the belt before the mischief was done. His boarding-house was, fortunately, very near, and by singular good luck I met the men who were carrying him, so that he received surgical aid within five minutes of the injury, or he must have perished from hemorrhage. I placed ligatures about the limbs and then proceeded to dress the wounds, securing in all some eleven vessels with silk ligatures. The first wound dressed was upon the left side of the head, the saw cutting *entirely through* the skull of the frontal end of the zygoma to a point above the eyebrow, dividing the temporal and another small artery. The next wound was upon the shoulder of the same side, slicing off the coverings of the acromion process down to the bone itself. Next, a wound upon the side between the eighth and ninth ribs, through the skin, adipose, etc., and just through the intercostal muscles. Two vessels troubled me here, but were finally secured. Next, a very deep wound in the middle of the thigh upon the left side, actually cutting the leg half off, dividing the bone, as nearly as could be ascertained with a probe, for a little more than one-half its diameter. Of course the femoral artery was untouched, but a remarkably large artery on the outside of the thigh gave me considerable trouble. Next, I found a deep wound across the right wrist just above the articulation of the long bones with the carpus, the arm being sawed nearly off at this point, cutting deeply into the radius and ulna, and rendering ligation necessary upon both sides. Upon the same arm, just below the insertion of the deltoid muscle, was a deep wound, cutting into the bone as in the other wounds, and rendering ligation of one vessel necessary. Besides the wounds described, he was cut, scratched, and "barked" in various other places, but none of them especially worthy of notice. Notwithstanding the improvised tourniquets which were applied so soon, the patient lost an immense quantity of blood, and was kept up only by stimulants at the last. The flesh wounds were dressed with the common interrupted suture—twenty or thirty of them, I should think—and adhesive plaster applied in the usual manner. Dr. C. had him taken to his home. The next day Dr. C. put him upon the liquor sodæ bisulph. in doses of twenty drops once in six hours, and left him in the hands of his family physician. In five days most of the sutures were removed, and the wounds looked well. Suppuration was fairly established, and Dr. C. directed the liquor sodæ to be given once in four hours in doses of fifteen drops, with tinct. cinch. comp. in doses of ʒj. The tenth day after the accident the suppuration was tremendous. From the twentieth day the recovery was very rapid, and upon the fortieth day he had a very fair use of the right hand. Two years now from the accident, he is perfectly well, employed as before upon the wood saw, and only complains of very little stiffness in the left shoulder where the coverings of the acromion process were sliced off.

Dr. C. ascribes the escape of the patient in this case from pus poisoning to the free use of the liquor sodæ bisulph.

The second case was one of a severe railroad injury in an habitual drunkard, and with broken-down health. In this case also the liq. sodæ bisulph. was freely used, which Dr. C. thinks contributed to his recovery.

Quinia in Croup.—Dr. E. Macfarlan, in the *New York Journal of Medicine* for Nov. 1854, p. 364 (vol. xiii. N.S., No. 3), claims for quinia great curative powers in croup, and he relates four cases, the first of which can hardly be considered as one of croup, since the laryngeal spasm was caused by a fungous body in the trachea. The other three were cases of spasmodic croup, which every experienced physician knows to be rarely fatal.

More recently additional statements have been published to show the therapeutic powers of quinia in croup (see Nos. of this Journal for Oct. 1870, p. 579, and Jan. 1871, p. 290), but the form of croup in which it is beneficial is but vaguely stated.

Dr. H. N. EASTMAN, Prof. of Practical Medicine in Geneva Med. College, N. Y., in a paper published in the *Buffalo Med. Journal* for Jan. 1871, highly extols the efficacy of quinia in croup in all its forms. He contends that there is no essential difference between croup in children and laryngitis of maturer years, though each is marked by peculiarities incident to the circumstances of age, and he advocates the exhibition of quinia, therefore, not only in spasmodic laryngitis, but where "deposition" has actually taken place, the quinia acting in the latter cases as an antiphlogistic.[1] "Here large quantities only are available," he says. "I would not administer less than from fifteen to thirty grains in twenty-four hours, to a child a year old or over. In these desperate cases it requires double the amount of quinia to subdue an existing inflammation and arrest the further effusion of lymph that is needed to prevent the deposition of coagulable matter during the intermissions or remissions that occur in the congestive stage." Nor is there anything to be apprehended from this heroic use of the article in violent cases of croup in young children in the latter stage. I have resorted to it in some few cases with complete success, and never with any alarming or untoward symptoms. Indeed, there seems to be almost a complete tolerance of this wonderful remedy in croup or puerile laryngitis."

The only case in regard to which Dr. E. favours us with any details is, however, evidently one of spasmodic laryngitis, coming on, as is usual in that disease, in a paroxysm at night, and recurring about the same hour on subsequent nights for two or three nights. In this case, a girl about 3½ years old, he gave five grains of quinia about two hours before the anticipated exacerbation, and an hour afterwards a similar dose. The next night the same treatment was repeated, and the child had no further trouble. Croup being endemic in his neighbourhood, Dr. E. had subsequent opportunities of trying this treatment, and he says: "I do not now recollect a single instance of croup, when I was called in any season, that is, while there remained any considerable intermissions, or even remissions, in the earlier part of the twenty-four hours, which nearly always occur in every form of the disease during the earlier stage, where I failed to subdue the malady and restore the patient at once to ordinary health. I have now just as much confidence in the power of quinia to arrest croup as I have in its efficacy in subduing any ordinary intermitting or periodical disease."

"I do not hesitate," he adds, "to give seven or eight grains to a child six months old, in any periodical disease, within a few hours. With less than this quantity I have seldom witnessed any satisfactory effect. For a child one year or more I much prefer ten grains, as this amount, given either in several divided doses during the whole period of repose, or, what I think quite as well, in two or three parts at short intervals, so that the whole amount be administered at least one hour or two before the expected paroxysm or exacerbation, seldom if ever fails to entirely put a stop to the disease."

["It is well known that Binz and some others maintain that quinia is an antiphlogistic."—ED.]

The Administration of Emetics during Pregnancy, and their Therapeutic Effects in Cases of threatened Abortion, Miscarriage, and Premature Labour.—Dr. J. G. Stokes, of Grayville, Illinois, in a paper in the *Chicago Medical Examiner*, January, 1871, is so earnest in advancing the claims of emetics in cases of threatened abortion, that we are disarmed from making that "bitter opposition" which he anticipates, and "which greeted Jenner when he promulgated his *great* discovery." On the contrary, barring a few random statements and infelicities of expression, we thank Dr. Stokes for this contribution to our current medical literature, and hope he will pursue the subject still further.

His views are based upon the following propositions: (1) That the good effects of emetics in arresting a tendency to abortion is a fact which he has clinically verified. (2) That the morning sickness of gravid women, so far from causing abortion, is "an effort of nature—her accommodater—to overcome some derangement of the economy, which otherwise might interfere with the primitive growth of the fœtus." (3) That the revulsive effects of an emetic must be of unquestioned value "in unlocking the secretions," "in righting up the digestive apparatus," and "in relieving the distress so much complained of during pregnancy, of sour stomach, heartburn, etc." (4) That "the manner in which many drugs act upon the economy in overcoming disease is left entirely to conjecture," but that our ignorance of their mode of action does not debar us from their use.

It is true that physiologists are not one with regard to the muscles involved in the act of vomiting; and the question yet remains vexed whether this is caused by the convulsive inverted action of the stomach alone, or whether by the further aid of the diaphragm and of the abdominal muscles. To specify the numerous arguments and experiments for and against these two theories would be a thankless task, and fortunately one quite unnecessary for our purpose. What we wish to know is, why is the act of vomiting considered injurious to gestation?

Travellers, who have suffered from sea-sickness, will tell us that the contre-coup or the recoil—so to speak—of the act of vomiting is expended upon the perineum, where severe pain will often be felt. Further, emetics are found useful in checking post-partum hemorrhages, not so much from the inherent hæmostatic property, which some of them possess, as from the succussion which the act of vomiting gives to the uterine muscles, thereby exciting their irritability and contractility. Indeed, there are not wanting physicians who hold that ergot acts as an ocytocic only when vomiting is induced by its use (*Lancet*, Jan. 17, 1863, p. 59). It is mainly from a recognition of these effects that the administration of emetics to the gravid woman has been forbidden.

In view of these well-established facts, one would *a priori* suppose emetics to be the most unsuitable medicines possible for arresting the process of abortion; and yet Dr. Stokes is not without a good show of reason for his practice.

Long ago obstetricians noticed that chronic diseases attended with cough brought on abortion; whilst those in which vomiting was a constant symptom did not prevent the woman from going to term. To explain this seeming inconsistency, Saucerotte was forced to advance the theory that in a fit of coughing, the spasmodic movement of the diaphragm being downwards, mechanically irritates the uterus to expel the ovum; whereas in vomiting the action of the diaphragm is upward. Sacombe (*Observations Médico-Chirurgicales sur la Grossesse*, l'an deuxième de la République, p. 42) accepts this explanation, and observes that "it is an error to suppose that emetics cannot be employed in pregnancy without danger." He further warns the gravid woman to avoid exposure to catarrhs, lest the succussion of the cough should bring on an abortion; and recommends her in such a case to resort to the use of *ipecacuanha*.

Positive evidence of our senses outweighs all theories; but let us advance one step further, and show that the administration of emetics for the purpose of arresting that hemorrhage which precedes an abortion, so far from running counter to the prevailing practice, tends rather to sustain it. In other words, that emetics are no more contraindicated than the remedies usually employed for that purpose. Opium, empirically, on account of its narcotic action, is *par excellence* the drug most used by the profession to arrest the pains, and

thereby the hemorrhage of a threatened abortion. Yet not only is opium of the greatest value in post-partum floodings, by its property of stimulating uterine fibres into tonic contraction, but next to venesection it is our most efficient agent for relaxing a rigid cervix. It, therefore, possesses two properties which theoretically would seem to favour, rather than to arrest, the process of abortion. Again, ergot stands at the head of ocytocics, and yet Drs. Battson (*Med. and Surg. Reporter*, July 30, 1870, p. 85), A. K. Gardner (*New York Journal of Medicine*, September, 1853), and others, including ourselves, have found it useful in arresting the hemorrhage of a threatened abortion. Further, savine, called by Pereira "the most powerful of emmenagogues," is the great stand-by of domestic abortionists, and yet the use of this drug in the hemorrhages of gestation is most warmly advocated by such men as Aran (*Medico-Chirurg. Review*, July, 1844), Metsch (*British and Foreign Med. Review*, April, 1850), and by Wedekind, Gunther, and Sauter (*American Journal of the Medical Sciences*, N. S., vol. viii. p. 745), who report typical examples to establish this point. For a similar purpose the oil of erigeron is employed by many practitioners—indeed, by those who contend that it is a more reliable parturient than even ergot.

It appears, then, that all the remedies hitherto employed to arrest the process of abortion have properties seemingly contradictory. These the limits of this article will not permit us to undertake to reconcile; it only remains for us now to consider wherein the action of emetics differs from that of the above agents. Like the latter, emetics have an inherent hæmostatic power, and the generally acknowledged one of mechanically arousing into action the uterine muscular fibre; but there is a something yet beyond these. The action of those emetics which vomit only after being dissolved and carried into the general circulation, is so analogous to that of the ergot of rye, that their effects are often interchangeable, and the latter may act only as an emetic, while the former shall excite uterine contractions. According to W. Tyler Smith (*Lancet*, Dec. 16, 1848, p. 658), the "one acts upon the medulla oblongata and the motor nerves of vomiting; the other upon the lower medulla spinalis and the motor nerves of uterine action." To ipecacuanha he goes so far as to attribute the positively direct and double action of influencing both the medulla oblongata and the lower medulla spinalis. Hence, in the first place, by exciting contraction of the abdominal muscles it mechanically irritates the uterus to contraction. In the second place, "it appears to have a special action upon the uterus, increasing its contractile power beyond what we could imagine to occur from the merely secondary effects of vomiting," making it, therefore, a most valuable remedy for every kind of flooding.

One word as to the *modus operandi* of those agents which enjoy a repute for warding off a threatened miscarriage. Should the only symptom be pain—caused either by simple irritation or by the presence of a small clot under the placenta—opium would be the remedy; for in the one it will control the irritation, and in the other may possibly cause the uterus to tolerate the clot until it shall become either absorbed or organized. If there be fatty degeneration of the membranes or of the placenta, or if there be present any other cause which converts the ovum into a foreign body, then nothing can stay the efforts of nature to expel the intruder—abortion will be inevitable. Should, however, a hemorrhage take place, dissecting up the utero-deciduous or utero-placental connections, and appearing externally, those agents alone will prove successful which, by producing a persistent contraction, shall both expel the clots and close up the bleeding orifices. By virtue of one or more of its three properties, opium will usually meet these indications. Ergot, savine, and erigeron have done this efficiently, even when opium failed; and why may not emetics? For, on the one hand, how rarely can criminal abortion be induced by their persistent use; on the other, the ocytocic effects produced by their therapeutic administration would be only momentary, and more than counterbalanced by the good effected—viz., the removal of the offending blood or clots, and the subsequent tonic contraction of the uterine walls. W. G.

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FEES.—The fee for instruction during the Summer Session, from March to November, is $100; for the Winter Lectures, $121. The fee for the entire year, for the Winter Lectures as well as for the Summer Session, is $200. The fee for Graduation is $30. The fee for Matriculation is $5. This is appropriated to the increase of the Library, and is to be paid to the Dean once by all who desire to become members of the College.

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